NISSHIN OilliO

03 November 2021

Dr. Paulette Gaynor
Office of Food Additive Safety (HFS-200)
Center for Food Safety and Applied Nutrition (CFSAN)
Food and Drug Administration
5001 Campus Drive
College Park, MD
20740 USA

Dear Dr. Gaynor:

Re: GRAS Notice for OPO-Fat

In accordance with 21 CFR §170 Subpart E consisting of §§ 170.203 through 170.285, The Nisshin OilliO Group, Ltd. (NOG), as the notifier, is submitting one hard copy and one electronic copy (on CD), of all data and information supporting the company's conclusions that OPO-Fat is GRAS on the basis of scientific procedures, for use in non-exempt infant formula for term and pre-term infants and specified conventional food and beverage products across multiple categories; these food uses of NOG's ingredient are therefore not subject to the premarket approval requirements of the *Federal Food, Drug and Cosmetic Act*. Information setting forth the basis for NOG's GRAS conclusion is enclosed for review by the agency.

I certify that the enclosed electronic files were scanned for viruses prior to submission and are thus certified as being virus-free using Symantec Endpoint Protection 12.1.5.

Should you have any questions or concerns regarding this GRAS notice, please do not hesitate to contact me at any point during the review process so that we may provide a response in a timely manner.

Sincerely,

Kinya Tsuchiya
Officer, General Manager
Central Research Laboratory
The Nisshin OilliO Group, Ltd.

GRAS NOTICE FOR THE USE OF OPO-FAT IN FOOD

SUBMITTED TO:
Office of Food Additive Safety (HFS-200)
Center for Food Safety and Applied Nutrition (CFSAN)
Food and Drug Administration
5001 Campus Drive
College Park, MD
20740 USA

SUBMITTED BY:
The Nisshin OilliO Group, Ltd.
1-23-1 Shinkawa, Chuo-ku
Tokyo 104-8285, Japan

DATE:
27 October 2021

GRAS Notice for the Use of OPO-Fat in Food

TABLE OF CONTENTS

PART 1. § 170.225 SIGNED STATEMENTS AND CERTIFICATION 4
- 1.1 Name and Address of Notifier 4
- 1.2 Common Name of Notified Substance 4
- 1.3 Conditions of Use 4
- 1.4 Basis for GRAS 5
- 1.5 Availability of Information 5
- 1.6 Freedom of Information Act, 5 U.S.C. 552 6

PART 2. § 170.230 IDENTITY, METHOD OF MANUFACTURE, SPECIFICATIONS, AND PHYSICAL OR TECHNICAL EFFECT 6
- 2.1 Identity 6
- 2.2 Manufacturing 7
  - 2.2.1 Production Process 7
  - 2.2.2 Raw Materials and Processing Aids 8
- 2.3 Product Specifications and Batch Analyses 9
  - 2.3.1 Specifications 9
  - 2.3.2 Batch Analysis 11
  - 2.3.3 2- and 3-MCPD Esters and Glycidyl Esters 12
- 2.4 Stability 14

PART 3. §170.235 DIETARY EXPOSURE 17
- 3.1 Current Regulatory Status 17
- 3.2 Functionality 17
- 3.3 Estimated Intakes of OPO-Fat from Proposed Food and Beverages Uses 17
  - 3.3.1 Methodology 17
  - 3.3.2 Results of Intake Estimates for OPO-Fat 20
  - 3.3.3 Intake from Infant Formula 21
  - 3.3.4 Summary and Conclusions 22

PART 4. §170.240 SELF-LIMITING LEVELS OF USE 22

PART 5. §170.245 EXPERIENCE BASED ON COMMON USE IN FOOD BEFORE 1958 23

PART 6. §170.250 NARRATIVE AND SAFETY INFORMATION 23
- 6.1 Introduction 23
- 6.2 Absorption, Distribution, Metabolism and Excretion 24
- 6.3 Toxicological Studies 25
  - 6.3.1 Two-Generation Rat Feeding Study Conducted with Betapol® 25
  - 6.3.2 Other Studies 26
- 6.4 Human Studies 28
  - 6.4.1 Infant Feeding Studies 28
  - 6.4.2 Studies in Adults 35
- 6.5 Other Studies (e.g., Allergenicity) 35
- 6.6 GRAS Panel Evaluation 36

6.7 Conclusion 36

PART 7. §170.255 LIST OF SUPPORTING DATA AND INFORMATION 37

List of Appendices

Appendix A GRAS Status Statement for Production Enzyme Lipase DN
Appendix B GRAS Panel Statement
Appendix C Safety and Suitability for Use in USDA Regulated Products
Appendix D Intakes Assessment Report

List of Figures and Tables

Figure 2.1-1 Structures of the Predominant Triglyceride Species in OPO-Fat (OPO) Compared to a Representative Triglyceride in Vegetable Oils (POP) 6
Figure 2.2.1-1 Manufacturing Process for OPO-Fat 8

Table 1.3-1 Intended Conditions of Use for OPO-Fat and Other High 2-Palmitic Vegetable Oils with GRAS Status in the U.S. 5
Table 2.3.1-1 Product Specifications for OPO-Fat Compared to Betapol® and InFat® 10
Table 2.3.2-1 Analytical Data Obtained from 5 Batches of OPO-Fat 12
Table 2.3.3-1 Analytical Data of 3-MCPD and GEs Obtained from 5 Batches of OPO-Fat 13
Table 2.4-1 Real-Time Stability of OPO-Fat Following Storage at 20°C for 6 Months 15
Table 2.4-2 Stability of OPO-Fat Under Accelerated Storage Conditions (60°C for 9 Weeks). 16
Table 3.3.2-1 Summary of the Estimated Daily Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data) 20
Table 3.3.2-2 Summary of the Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data) 21
Table 3.3.3-1 Summary of Estimated Daily Intakes of OPO-Fat from the Proposed Use in Non-Exempt Infant Formula by Infant Population Group (2017-2018 NHANES Data). 21
Table 6.4.1-1 Clinical Studies with High 2-Palmitic Vegetable Oils 29

GRAS Notice for the Use of OPO-Fat in Food

Part 1. § 170.225 Signed Statements and Certification

In accordance with 21 CFR §170 Subpart E consisting of §§170.203 through 170.285, The Nisshin OilliO Group, Ltd. (NOG) hereby informs the United States (U.S.) Food and Drug Administration (FDA) that the intended uses of OPO-Fat, as manufactured by NOG, under the conditions of its intended use as described in Section 1.3 below, are not subject to the premarket approval requirements of the Federal Food, Drug, and Cosmetic Act based on NOG's view that these notified uses of OPO-Fat are Generally Recognized as Safe (GRAS). In addition, as a responsible official of NOG, the undersigned hereby certifies that all data and information presented in this notice represents a complete and balanced submission that is representative of the generally available literature. NOG considered all unfavorable as well as favorable information that is publicly available and/or known to NOG and that is pertinent to the evaluation of the safety and GRAS status of OPO-Fat as a food ingredient for addition to non-exempt term and pre-term infant formula and food and beverage products, as described herein.

Signed,

November 1, 2021

Kinya Tsuchiya
Officer, General Manager
Central Research Laboratory
The Nisshin OilliO Group, Ltd.

Date

1.1 Name and Address of Notifier

The Nisshin OilliO Group, Ltd.
1-23-1 Shinkawa, Chuo-ku
Tokyo 104-8285
Japan

1.2 Common Name of Notified Substance

OPO-Fat; High 2-palmitic vegetable oil, beta-palmitin, beta-palmitate, beta-palmitic acid, and *sn*-2 palmitate, etc.

1.3 Conditions of Use

OPO-Fat is intended for use in non-exempt infant formulas for term and pre-term infants at levels of up to 70% of the total fat, and as a replacement for all added fat in baby and toddler foods (including meat and poultry products) and in generally processed food products (excluding meat and poultry products). As summarized in Table 1.3-1, these intended conditions of use are identical to those that have been concluded GRAS for InFat® under GRN 192. Another high 2-palmitic vegetable oil product (Betapol®) has also been concluded GRAS for use in infant formula under GRN 131. OPO-Fat is intended to serve as a substitute for these other high 2-palmitic vegetable oils (InFat®, Betapol®).

Similar to human breast milk, approximately 40 to 55% of the caloric value of infant formula is provided for by fat (Long *et al.*, 2013; Delplanque *et al.*, 2015; Zou *et al.*, 2017). Commercially available infant

formulas are most often formulated using vegetable oils to provide the fat source, with various blends of vegetable oils (*e.g.*, coconut, soy, canola, high oleic safflower, high oleic sunflower, and palm olein oils) selected to best match the overall fatty acid composition of human breast milk (Long *et al.*, 2013). However, vegetable oils contain most of their saturated fatty acids, including palmitic acid, in the outer *sn*-1 and *sn*-3 position of triglycerides whereas palmitic acid is predominantly located at the *sn*-2 position in human breast milk (Karupaiah and Sundram, 2007; Innis, 2011; Delplanque *et al.*, 2015; Zou *et al.*, 2016). Therefore, high 2-palmitic vegetable oils with an increased proportion of the palmitic acid located in the *sn*-2 position were developed for use in infant formula to better mimic the triglyceride structures in human breast milk.

Although high 2-palmitic vegetable oils (OPO-Fat, Betapol®, and InFat®) can be used as a complete (100%) replacement for fats that are added to baby/toddler foods and generally processed foods, they cannot be used as the sole source of fats in infant formula, which are formulated as an exclusive source of nutrients for infants, because they lack essential fatty acids such as linoleic acid and α-linolenic acid that are found in human breast milk. Instead, high 2-palmitic vegetable oils will need to be added to infant formula together with other vegetable oils to provide a balanced supply of fatty acids.

Table 1.3-1 Intended Conditions of Use for OPO-Fat and Other High 2-Palmitic Vegetable Oils with GRAS Status in the U.S.

High 2-Palmitic Vegetable Oil	Manufacturer/Notifier	Intended Conditions of Use	
		Infant Formula	Other Foods
OPO-Fat	Nisshin OilliO Group Ltd.	For use in non-exempt infant formula for term and preterm infants at levels of **up to 70% total fat intake.**	To replace all added fat in baby/toddler foods (including meat and poultry products), and all added fat in processed foods in general (excluding meat and poultry products).
InFat®	Enzymotec Ltd. (GRN 192)	For use in infant formula for term and preterm infants at levels of **up to 70% total fat intake.**	To replace all added fat in baby/toddler foods (including meat and poultry products), and all added fat in processed foods in general (excluding meat and poultry products).
Betapol®	Loders Croklaan B.V. (GRN 131)	For use in infant formula for term and preterm infants at levels of **up to 80% total fat intake.**	Not applicable.

GRAS = Generally Recognized as Safe; GRN = Generally Recognized as Safe Notice; U.S. = United States.

1.4 Basis for GRAS

Pursuant to 21 CFR § 170.30 (a)(b) of the Code of Federal Regulations (CFR) (U.S. FDA, 2020a), NOG has concluded that the intended uses of OPO-Fat as described herein are GRAS on the basis of scientific procedures.

1.5 Availability of Information

The data and information that serve as the basis for this GRAS Notification will be sent to the U.S. FDA upon request, or will be available for review and copying at reasonable times at the offices of:

The Nisshin OilliO Group, Ltd.
1-23-1 Shinkawa, Chuo-ku
Tokyo 104-8285
Japan

Should the FDA have any questions or additional information requests regarding this Notification, NOG will supply these data and information upon request.

1.6 Freedom of Information Act, 5 U.S.C. 552

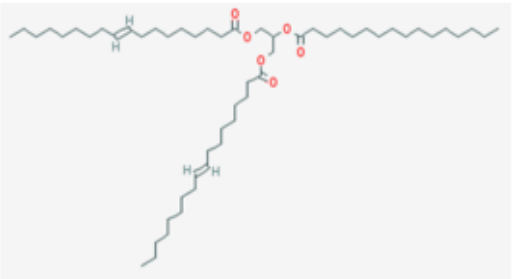
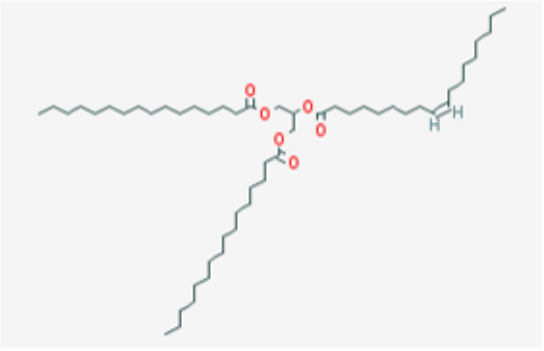
It is NOG's view that all data and information presented in Parts 2 through 7 of this Notice do not contain any trade secret, commercial, or financial information that is privileged or confidential, and therefore, all data and information presented herein are not exempted from the Freedom of Information Act, 5 U.S.C. 552.

Part 2. § 170.230 Identity, Method of Manufacture, Specifications, and Physical or Technical Effect

2.1 Identity

OPO-Fat is a mixture of vegetable oils, namely palm stearin and a source of oleic acid (*e.g.,* high oleic sunflower oil, palm kernel oil), in which the positioning of the fatty acids on the triglyceride backbone has been rearranged through enzymatic interesterification. This reaction increases the proportion of the palmitic acid occurring at the *sn*-2 position. Vegetable oils tend to contain unsaturated fatty acids in the *sn*-2 position and saturated fatty acids at the *sn*-1 and *sn*-3 positions (Karupaiah and Sundram, 2007; Innis, 2011; Delplanque *et al.*, 2015). An example of such triglyceride is 1,3-dipalmitoyl-2-oleoylglycerol (POP) (see Figure 2.1.2-1). In contrast, approximately 55% of the palmitic acid (C16:0) in OPO-Fat is esterified at the *sn*-2 position, and the predominant triglyceride species present is 1,3-dioleoyl-2-palmitoylglycerol (OPO) (see Figure 2.1-1).

Figure 2.1-1 Structures of the Predominant Triglyceride Species in OPO-Fat (OPO) Compared to a Representative Triglyceride in Vegetable Oils (POP)

1,3-dioleoyl-2-palmitoylglycerol (OPO)	1,3-dipalmitoyl-2-oleoylglycerol (POP)
	

Source: https://pubchem.ncbi.nlm.nih.gov/

2.2 Manufacturing

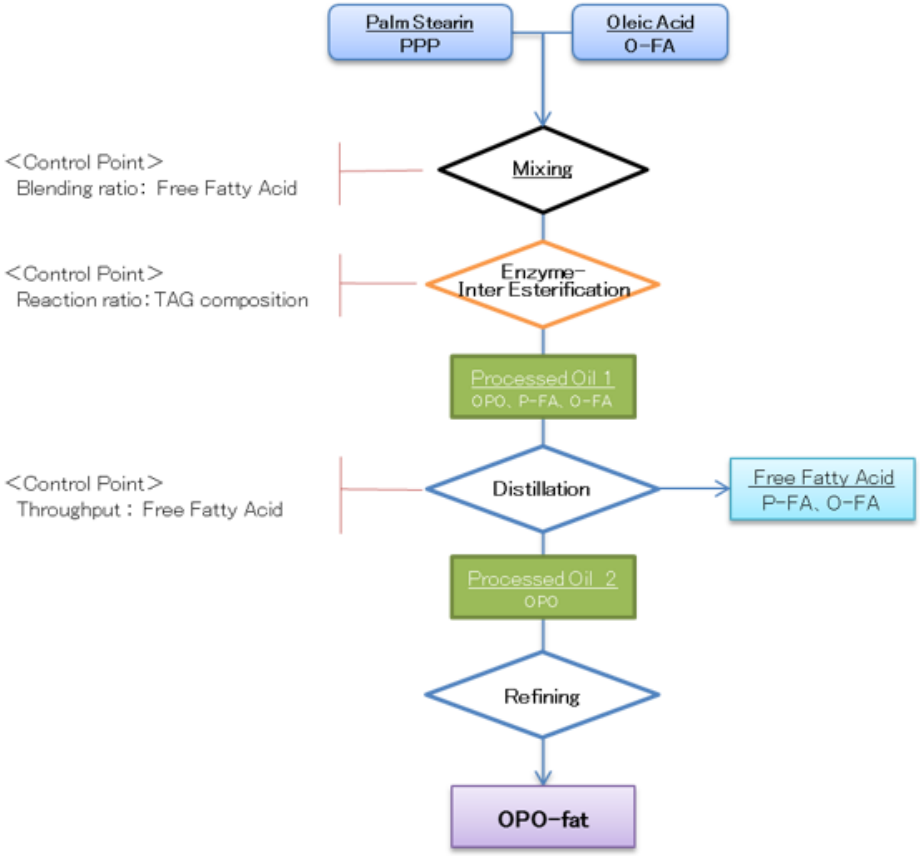
2.2.1 Production Process

A flowchart for the production process of NOG's OPO-Fat is presented in Figure 2.2.1-1 below. NOG's OPO-Fat is manufactured using the same basic principles as those used to produce other high 2-palmitic vegetable oils such as Betapol® and InFat®, as described in GRN 131 and GRN 192, respectively. Palm stearin and a source of oleic acid such as high oleic sunflower oil or palm kernel oil are subjected to an interesterification reaction catalyzed by a suitable lipase enzyme to rearrange the positional distribution of the fatty acids on the triglyceride backbone. The free fatty acids are then removed by distillation, and the mixture undergoes refining steps (*e.g.*, bleaching and deodorization) that are commonly employed during the processing of edible oils. The lipase enzyme is immobilized onto an inert carrier, which facilitates its removal during the production of the OPO-Fat. Any residual amounts of enzymes remaining will be denatured and inactivated during the refining steps of the OPO-Fat.

Concerns have been raised regarding the potential generation of certain contaminants (*i.e.*, 3-MCPD and GE) that can result from commonly employed processes utilized in the refinement of edible oil products. These contaminants are expected to form as a result of high temperatures (>200°C) applied during the deodorization step of the oil refinement process (MacMahon *et al.*, 2013; Leigh and MacMahon, 2017). In 2019, the WHO described various mitigation strategies that could be used during the deodorization step of vegetable oil refinement, and suggested "*to conduct deodorization at 190-230°C*"; however, it was acknowledged that "*it is not practical to decrease deodorization temperatures below the threshold that would lead to 3-MCPDE formation (160-200°C), as that could affect the quality and safety of the oil*" (Codex Alimentarius, 2019). To reduce thermal load in oil and reduce GE and 3-MCPDE production "*a longer deodorization period at a lower temperature*" could be used (WHO, 2019). As such, NOG has optimized its production process of OPO-Fat and was able to reduce the generation of these contaminants *via* the reduction of temperatures used in the deodorization step from 230°C to 210°C.

NOG produces OPO-Fat in accordance with cGMP, and a Hazards Analysis and Critical Control Points (HACCP) system is in place. The production facilities are also certified to be compliant with ISO 9001 and FSSC 22000.

Figure 2.2.1-1 Manufacturing Process for OPO-Fat



O-FA = oleic acid; OPO = 1,3-dioleoyl-2-palmitoylglycerol; P-FA = palmitic acid; PPP = tripalmitin; TAG = triglyceride

2.2.2 Raw Materials and Processing Aids

The raw materials that NOG uses in the production of OPO-Fat include palm stearin and a source of oleic acid such as high oleic sunflower oil or palm kernel oil. These vegetable oils meet food-grade specifications and are already widely used in the food supply.

The interesterification reaction is catalyzed by a safe and suitable lipase enzyme. OPO-Fat is manufactured using an immobilized lipase preparation (Lipase DN), which is produced from a non-pathogenic and non-toxicogenic strain: *Rhizopus oryzae* LD-2. The enzyme supplier (Amano Enzymes Inc.) has concluded that Lipase DN is GRAS when it is used as a food processing aid to produce interesterified oil, at levels up to 40 ppm of the raw oil, in accordance with cGMP (see Appendix A). The Lipase DN preparation used in the production of NOG's OPO-Fat shares an identical amino acid sequence to Lipase D that has been previously concluded to be GRAS for use in the manufacture of fats and oils for food use. In 2006, Lipase D produced from a related strain of *R. oryzae* (strain LD-1; Amano Enzyme Inc.) was concluded to be GRAS for use in the production of tailored triglycerides to be added to infant formula and was the subject of a GRAS Notice submitted to the FDA and filed by the agency without objection as GRN 216.

The *R. oryzae* LD-2 production strain used for synthesis of Lipase DN is a derivative of the parental strain, *R. oryzae* LD-1, which was concluded to be GRAS for the production of Lipase D as discussed in GRN 216. The genetic modification of the *R. oryzae* LD-1 production strain was achieved using conventional chemical mutagenesis and UV radiation methods to produce *R. oryzae* LD-2. The resultant LD-2 strain differs from the LD-1 strain in that it has not been observed to grow at 40 °C. Lipase D and Lipase DN, produced from *R. oryzae* production strains LD-1 and LD-2, respectively, contain identical

amino acid sequences, and are produced using the same manufacturing process, as described within GRN 216, with the one exception that Lipase DN is spray dried rather than freeze dried.

As discussed in Section 2.2.1, Lipase DN is immobilized onto an inert carrier during the manufacture of OPO-Fat, which facilitates its removal. Any residual enzyme post-interestification is denatured and inactivated during the subsequent refining steps.

Although the safety of *R. oryzae* as a species has been well-established (GRN 216) and no *R. oryzae* or Lipase DN remains in the finished OPO-Fat product, strain-specific aspects related to safety were also considered. The decision tree for safety evaluation of food enzymes by Pariza and Johnson (2001) was used to evaluate the safety of the Lipase DN production organism. This decision tree is presented in Table 2.2.2-1, below, and the outcome of the safety evaluation supports a conclusion that the enzyme preparation is safe for its intended use.

Table 2.2.2-1 Pariza and Johnson Decision Tree for Evaluating Enzyme Safety (Pariza and Johnson,

1. Is the production strain genetically modified? If yes, go to 2. If no, go to 6.
Yes
2. Is the production strain modified using rDNA techniques? If yes, go to 3. If no, go to 5.
No, the genetic modification was achieved using conventional chemical mutagenesis and UV radiation methods.
5. Is the production strain sufficiently well characterized so that one may reasonably conclude that unintended pleiotropic effects which may result in the synthesis of toxins or other unsafe metabolites will not arise due to the genetic modification method that was employed? If yes, go to 6. If no, go to 7.
Yes, *R. oryzae* as a species is well characterized as non-pathogenic and non-toxicogenic and its safety has been well-established.
6. Is the production strain derived from a safe lineage, as previously demonstrated by repeated assessment *via* this evaluation procedure?
Yes, the strain was derived from parental strain *R. oryzae* LD-1, which has GRAS status for the production of Lipase D as described in GRN 216.
If yes, the test article is ACCEPTED. If no, go to 7.
Yes, test article ACCEPTED.

2.3 Product Specifications and Batch Analyses

2.3.1 Specifications

The product specifications that have been established for NOG's OPO-Fat are presented in Table 2.3.1-1. OPO-Fat is specified to contain >50% of the total palmitic acid at the *sn*-2 position, and the material is composed largely of triglycerides (≥94%), with only small amounts of diglycerides (≤6%) and monoglycerides (≤1%) present. The specifications for OPO-Fat also includes acceptable limits for heavy metals and microbiological contaminants. All methods for analyses of the specification parameters are standardized and validated (*e.g.*, methods developed by the American Oil Chemists' Society and the Association of Analytical Communities International).

For comparison, the specifications reported in the GRAS Notices for Betapol® (GRN 131) and InFat® (GRN 192) are also summarized. Considering that OPO-Fat is manufactured from the same starting materials (palm stearin and oleic acid) using similar processes as these other high 2-palmitic vegetable oils, the compositions of the resulting products are also comparable. For instance, OPO-Fat contains a similar proportion of total palmitic acid at the *sn*-2 position as Betapol® (≥43%) and InFat® (>52%).

Table 2.3.1-1 Product Specifications for OPO-Fat Compared to Betapol® and InFat®

Parameter	Specification for OPO-Fat	Method of Analysis Employed by NOG	Specification Reported for Other High 2-Palmitic Vegetable Oils	
			Betapol® (GRN 131)	InFat® (GRN 192)[a]
Identification				
Appearance	Clear liquid (60°C)	-	Light yellow liquid (35°C)	Clear liquid (60°C); turbid liquid to paste (25°C)
Water (%)	<0.05	AOCS Ca 2e-84	<0.05 (plus insoluble matter)	<0.1
Acid value (mg KOH/g)	≤0.3	AOCS Cd 3d-63	-	≤0.3
Peroxide value (mEq/kg)	≤1	AOCS Cd 8b-90	≤2	≤5
Ash (%)	<0.1	AOCS Ca 11-55	-	<0.05
Triglycerides (%)	≥94	AOCS Cd 11c-93	-	>96
Diglycerides (%)	≤6	AOCS Cd 11c-93	<6	<4
Monoglycerides (%)	≤1	AOCS Cd 11c-93	-	<1
Fatty Acids (% of total fatty acids)				
Palmitic acid (16:0)	24 to 42	AOCS Ce 1h-05	-	27 to 48
Stearic acid (18:0)	1 to 6	AOCS Ce 1h-05	-	3 to 8
Oleic acid (18:1)	45 to 62	AOCS Ce 1h-05	-	40 to 58
Linoleic acid (18:2)	6 to 10	AOCS Ce 1h-05	-	4 to 11
Total trans fatty acids	≤1[b]	AOCS Ce 1h-05	-	<2
Palmitic acid at *sn*-2 position (% of total 16:0)	>50	AOCS Ch 3-91	≥43	>52
SFA (% of total fatty acids)	28 to 50	AOCS Ce 1h-05	30 to 60	-
MUFA (% of total fatty acids)	30 to 62	AOCS Ce 1h-05	30 to 50	-
PUFA (% of total fatty acids)	0 to 20	AOCS Ce 1h-05	0 to 20	-
Heavy Metals				
Lead (mg/kg)	<0.1	AOAC 2015.01	<0.1	<0.1
Cadmium (mg/kg)	<0.02	AOAC 2015.01	-	See footnote c
Arsenic (mg/kg)	<0.1	AOAC 2015.01	-	See footnote c
Mercury (mg/kg)	<0.2	AOAC 2015.01	-	<0.2
Microbiological Contaminants				
Total count (CFU/g)	<1,000	Japan Food Hygiene Association	-	<1,000
Molds (CFU/g)	<100	Japan Food Hygiene Association	-	<100
Yeast (CFU/g)	<100	Japan Food Hygiene Association	-	<100
Coliforms (CFU/g)	Negative	Japan Food Hygiene Association	-	Negative
Salmonella (CFU/g)	Negative	Japan Food Hygiene Association	-	Negative

Table 2.3.1-1 Product Specifications for OPO-Fat Compared to Betapol® and InFat®

Parameter	Specification for OPO-Fat	Method of Analysis Employed by NOG	Specification Reported for Other High 2-Palmitic Vegetable Oils	
			Betapol® (GRN 131)	InFat® (GRN 192)[a]
Staphylococcus aureus (CFU/g)	Negative	Japan Food Hygiene Association	-	Negative
Cronobacter spp.	Negative	ISO 22964:2017	-	-

AOAC = Association of Analytical Communities; AOCS = American Oil Chemists' Society; CFU = colony forming units; GRN = Generally Recognized as Safe Notice; ISO = International Organization for Standardization; MUFA = monounsaturated fatty acids; NOG = Nisshin OilliO Group Ltd.; PUFA = polyunsaturated fatty acids; SFA = saturated fatty acids.

[a] After filing the GRN for InFat® in 2006, Enzymotec notified the Food and Drug Administration (FDA) in 2012 of a change in the production process (*i.e.*, the randomization step for palm stearin was no longer required), and correspondingly, an amendment to the product specifications. The amended specifications for InFat®, as notified to the FDA in 2012, are presented in this table.

[b] All refined edible oils contain some amount of *trans* fat as an unintentional by-product of their manufacturing process, as recognized by the FDA in their determination that partially hydrogenated oils (PHOs) are no longer Generally Recognized as Safe (78 FR 67169 [U.S. FDA, 2013]; 80 FR 34650 [U.S. FDA, 2015]). During the production of non-hydrogenated refined oils (*e.g.*, soybean oil), *trans* fatty acids are formed because of *cis* to *trans* isomerization occurring under the high temperatures used during processing steps such as deodorization (U.S. FDA, 2013). The FDA recognizes that the concentration of *trans* fatty acids in non-hydrogenated refined oils, when present as an unavoidable impurity due to high-temperature processing, is typically below 2% (U.S. FDA, 2013, 2015). The presence of *trans* fats in refined edible oils is differentiated from *trans* fats in PHOs, which are considered *"an integral component of PHOs and are purposely produced in these oils to affect the properties of the oils and the characteristics of the food to which they are added"* (U.S. FDA, 2013, 2015).

[c] The specification limits for cadmium and arsenic was reported as <0.02 mg/g and <0.1 mg/g, respectively, in the GRAS notice for InFat® (GRN 192). However, given that these limits would be quite high (<20 mg/kg for cadmium and <100 mg/kg for arsenic), it is likely there was an error in the unit of measure in GRN 192. The analytical data presented in the GRAS notice indicate the levels to be <0.001 mg/g for cadmium and <0.1 mg/g for arsenic across 6 batches of InFat®.

2.3.2 Batch Analysis

Analytical data from representative batches of OPO-Fat demonstrates NOG's manufacturing process produces a consistent product that meets the defined specifications. The data from these batch analyses are presented in Table 2.3.2-1 below.

OPO-Fat is specified to contain >50% of its palmitic acid at the *sn*-2 position, and this value is expected to be typically in the ranges of 55 to 56%, as supported by the data from batch analyses. The proportion of palmitic acid that is esterified to the *sn*-2 position of triglycerides can vary depending on different factors, such as the ratio of the raw materials used (*i.e.*, palm stearin and oleic acid). OPO-Fat containing approximately 55% of palmitic acid at the *sn*-2 position will be the main material that will be commercially marketed. This is consistent with the data presented for InFat® in GRN 192, in which the proportion of palmitic acid at the *sn*-2 position ranged from 54.6 to 56.2% across 6 batches of InFat® analyzed. Similarly, in In GRN 131, it is stated that: "*Betapol™ is a triglyceride mixture with a palmitate content of 30-55%, of which approximately 45-80% is esterified to the sn-2 position of the glycerol backbone*". According to the company's webpage[1], Betapol® is available as different formulations, including Betapol® B-55 Concentrated which contains approximately 55% of the palmitic acid at the *sn*-2 position.

[1] Available at: https://www.betapol.com/betapol-opo-brand. Other formulations that are available includes Betapol® 45 and Betapol® 41, containing 45% and 41% of the palmitic acid at the *sn*-2 position, respectively. These formulations can be added as the total fat phase in infant formula, unlike Betapol® 55 Concentrated, which needs to be mixed with other selected vegetable oils to serve as the complete fat phase.

Table 2.3.2-1 Analytical Data Obtained from 5 Batches of OPO-Fat

Parameter	Specification	Lot No.				
		06108	06222	06306	06407	06508
Identification						
Appearance	Clear liquid (60°C)	Clear	Clear	Clear	Clear	Clear
Water (%)	<0.05	0.02	0.02	0.02	0.02	0.02
Acid value (mg KOH/g)	≤0.3	0.15	0.16	0.14	0.16	0.15
Peroxide value (mEq/kg)	≤1	0	0	0	0	0
Ash (%)	<0.1	n.d.	n.d.	n.d.	n.d.	n.d.
Triglycerides (%)	≥94	96	96	96	96	96
Diglycerides (%)	≤6	3	4	4	4	4
Monoglycerides (%)	≤1	0.9	0.9	0.7	0.2	0.6
Fatty Acids (% of total fatty acids)						
Palmitic acid (16:0)	24 to 42	38	38	38	38	38
Stearic acid (18:0)	1 to 6	4	4	4	4	4
Oleic acid (18:1)	45 to 62	49	49	49	49	49
Linoleic acid (18:2)	6 to 10	7	7	7	7	7
Total trans fatty acids	≤1	0.9	0.9	0.9	0.9	0.9
Palmitic acid at *sn*-2 position (% of total 16:0)	>50	57	57	56	57	57
SFA (% of total fatty acids)	28 to 50	43	43	43	43	43
MUFA (% of total fatty acids)	30 to 62	50	50	50	50	50
PUFA (% of total fatty acids)	0 to 20	7	7	7	7	7
Heavy Metals[a]						
Lead (mg/kg)	<0.1	n.d.	n.d.	n.d.	n.d.	n.d.
Cadmium (mg/kg)	<0.02	n.d.	n.d.	n.d.	n.d.	n.d.
Arsenic (mg/kg)	<0.1	n.d.	n.d.	n.d.	n.d.	n.d.
Mercury (mg/kg)	<0.2	n.d.	n.d.	n.d.	n.d.	n.d.
Microbiological Contaminants						
Total count (CFU/g)	<1,000	<300/g	<300/g	<300/g	<300/g	<300/g
Molds (CFU/g)	<100	Negative	Negative	Negative	Negative	Negative
Yeast (CFU/g)	<100	Negative	Negative	Negative	Negative	Negative
Coliforms (CFU/g)	Negative	Negative	Negative	Negative	Negative	Negative
Salmonella (CFU/g)	Negative	Negative	Negative	Negative	Negative	Negative
Staphylococcus aureus (CFU/g)	Negative	Negative	Negative	Negative	Negative	Negative
Cronobacter spp.	Negative	Negative	Negative	Negative	Negative	Negative

CFU = colony forming units; MUFA = monounsaturated fatty acid; n.d. = not detected; PUFA = polyunsaturated fatty acid; SFA = saturated fatty acid.

[a] The limits of detection are 0.05 mg/kg for lead, 0.01 mg/kg for cadmium, 0.1 mg/kg for arsenic, and 0.01 mg/kg for mercury.

2.3.3 2- and 3-MCPD Esters and Glycidyl Esters

Since the original GRN submissions of other high 2 palmitic vegetable oils (GRN Nos. 131 and 192), there has been an increased focus on the mitigation of incidental contaminants formed during the refining of vegetable oil products. 3-MCPD and GE are processing contaminants that are reported to be present in a wide range of refined edible oils, including those that are commonly used in infant formula (Leigh and MacMahon, 2017; MacMahon *et al.*, 2013; Spungen *et al.,* 2018). These contaminants are formed during the high temperatures (>200°C) applied during the deodorization step of the oil refinement process (MacMahon *et al.*, 2013; Leigh and MacMahon, 2017). Consumption of these compounds has been shown to have adverse toxicological effects on kidney and male reproductive organ health and are

human carcinogens (Codex Alimentariu, 2019). Following a review of mitigation efforts in the vegetable oil processing industry, Oey et al. (2019) concluded that water degumming, neutralization, deodorization, or the use of absorbents, enzymes, or rebleaching during post-refining mitigation can all effectively mitigate MCPDA and glycidyl ester concentrations in the finished product.

Occurrence data reviewed by the European Food Safety Authority (EFSA) Panel on Contaminants in the Food Chain during their evaluation of MCPD and GE in foods indicate that the highest levels of these contaminants is present in fats and oils, particularly "palm oil/fat"[2] (EFSA, 2016). Palm oil/fat were reported to have mean middle bound level of 2,912 µg/kg for 3-MCPD (from esters) and 3,955 µg/kg for glycidol (from esters) (EFSA, 2016). Similarly, in analyses conducted by MacMahon *et al.* (2013), the levels of total bound 3-MCPD across 94 samples of various edible oils in the U.S. ranged from 0.005 to 7.2 mg/kg, while the levels of bound glycidol ranged from below the limit of quantification to 10.5 mg/kg, with the highest levels for both contaminants being reported in palm and palm-derived oils.

Although no maximum regulatory limits exist for the acceptable levels of 3-MCPD and GE in foods in the U.S., the levels of GE in OPO-Fat are within the maximum level of 500 µg/kg (0.5 mg/kg) for glycidyl fatty acid esters expressed as glycidol in "vegetable oils and fats destined for the production of baby food and processed cereal-based food for infants and young children" specified under Commission Regulation (EC) No 1881/2006 (as amended) in the European Union (EU).

Throughout the production process of NOG's OPO-Fat ingredient, it is tested using a validated method (AOCS Cd 29c-13) to ensure low levels of these incidental contaminants in the finished product. Analytical data from representative batches of OPO-Fat demonstrates a consistent product that contains low levels of MCPD and Glycidyl esters. The data from these batch analyses are presented in Table 2.3.3-1 below. Considering that the levels of 3-MCPD and GE in OPO-Fat are also well within the ranges that have been reported in edible oils, as described above (EFSA, 2016; MacMahon *et al.*, 2013), no adverse effects are anticipated from the presence of these residual processing contaminants in OPO-Fat.

Table 2.3.3-1 Analytical Data of 3-MCPD and GEs Obtained from 5 Batches of OPO-Fat

Parameter [a]	Lot No.					AVG
	06108	06222	06306	06407	06508	
3-MCPD and 3-MCPD Fatty Acid Esters (mg/kg)	0.52	0.56	0.53	0.56	0.52	0.54
Glycidol and Glycidol Fatty Acid Esters (mg/kg)	0.23	0.30	0.23	0.32	0.31	0.28

3-MCPD = 3-monochloropropane-1,2-diol; GE = glycidyl esters.
[a] The limits of detection are 0.05 mg/kg for each of the analytes in this table.

There has been growing concern with regards to infant exposure to 3-MCPD and GE from refined oils given that fats from added oils are important for infant nutrition (U.S. FDA, 2020b). The FDA recently published a study evaluating the levels of 3-MCPD and GE in commercial infant formulas purchased in 10 different cities across the U.S. between December 2017 and January 2019, in which refined oils are used as the primary fat source (Beekman et al., 2020). The representative sample of infant formulas on the U.S. market (n = 222) included powder, concentrate, and ready-to-feed formulas produced by 4 different infant formula manufacturers, one of which did not use palm oil or palm olein in the production of their infant formula products (Manufacturer A). Fat was extracted from 2 g powdered infant formula (or equivalent amounts for liquid formula when expressed on a powdered basis), so that all concentrations are reported as µg contaminant per g of powdered infant formula. Across the 4 infant

[2] OPO-Fat is produced from palm stearin and a source of oleic acid (e.g., palm kernel oil or high-oleic sunflower oil). The EFSA scientific opinion did not provide the levels of 3-MCPD or GE in palm stearin, though palm kernel oil was reported to have a mean middle bound level of 624 µg/kg for 3-MCPD (from esters) and 421 µg/kg for glycidol (from esters) (EFSA, 2016). Sunflower seed oil was reported to have a mean middle bound level of 521 µg/kg for 3-MCPD (from esters) and 269 µg/kg for glycidol (from esters) (EFSA, 2016). Commission Regulation (EC) No 1881/2006

formula manufacturers, average total bound 3-MCPD concentrations, ranging from 0.035 to 0.63 µg/g powder, were higher than average total bound GE levels, ranging from 0.019 to 0.22 µg/g powder. Overall, average total bound 3-MCPD and GE levels were lower in infant formulas produced by Manufacturers B and C (0.035 to 0.070 µg 3-MCPD/g powder and 0.019 to 0.033 µg GE/g powder) compared to infant formulas produced by Manufacturer D (0.63 µg 3-MCPD/g powder and 0.22 µg GE/g powder). The authors suggest that the difference in the concentration of these contaminants is likely the result of mitigation measures employed by refined oil manufacturers whose ingredients were sourced by infant formula Manufacturers B and C. The average total bound concentration of 3-MCPD in infant formulas produced by Manufacturer A without palm oil or palm olein (0.12 µg/g powder) was also considerably higher than concentrations in palm-containing infant formulas produced by Manufacturers B and C, though the average total bound GE concentration was similar (0.019 µg/g powder).

Nutrient data are available for a comprehensive list of foods on the U.S. market from the US Department of Agriculture (USDA) National Nutrient Database for Standard Reference (SR)-Legacy, released in 2018, including 28 infant formula powder (not reconstituted) products (USDA, 2018). The average total lipid (fat) amount reported in these infant formula products is 26.54 g/100 g powder. Assuming 70% of total fat in infant formula is replaced by OPO-fat (18.58 g/100 g powder) and considering the average levels of 3-MCPD and GE from 5 batches of OPO-fat (0.54 and 0.28 mg/kg, respectively; see Table 2.3.3-1), the addition of OPO-fat to powdered infant formula under the proposed conditions of use would result in 3-MCPD and GE levels of 0.10 and 0.05 µg/g powder. In comparison to published data (Beekman et al., 2020), 3-MCPD levels from the proposed conditions of use of OPO-fat in powdered infant formula (0.10 µg/g powder) would be similar to total average bound MCPD reported to occur in infant formula produced without palm oil/palm olein (Manufacturer A: 0.12 µg/g powder), and lower than total average bound MCPD reported to occur in infant formula with refined oils that may not be produced with mitigation measures to lower contaminant concentrations (Manufacturer D: 0.63 µg/g powder). Likewise, GE levels from OPO-fat in powdered infant formula (0.05 µg/g powder) would be most similar to total average bound GE reported to occur in infant formula produced without palm oil/palm olein or with refined oils likely produced using mitigation measures (Manufacturers A to C: 0.019 to 0.033 µg/g powder).

Additionally, the levels of 3-MCPD and GE from the proposed conditions of use of OPO-fat in infant formula (0.10 and 0.05 µg/g powder, respectively) are below or at maximum levels of the contaminants currently permitted in powdered infant formula in the EU, of 0.125 µg 3-MCPD/g powder and 0.05 µg GE/g powder [Commission Regulation (EU) 2020/1322 of 23 September 2020[3]].

2.4 Stability

Given that OPO-Fat is simply a vegetable oil in which the positional distribution of the fatty acids on the triglyceride backbone have been rearranged, it is expected to have similar stability profiles as other edible vegetable oils during bulk storage and when it is incorporated into food products.

The stability of OPO-Fat is currently being assessed in real-time following storage at 20°C in its original packaging. Preliminary results obtained by NOG after 6 months of storage are presented in Table 2.4-1 below, and they indicate no changes in quality parameters during this time. Samples will be analyzed again at every 6 months for up to 3 years. In addition, OPO-Fat has been tested in an accelerated storage stability test. Samples of the OPO-Fat were stored in its original packaging at 60°C for 9 weeks. The results of this test are summarized in Table 2.4-2.

Based on these results, it appears that OPO-Fat is stable when kept under recommended storage conditions for at least 6 months.

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ:L:2020:310:TOC&uri=uriserv:OJ.L_.2020.310.01.0002.01.ENG

Table 2.4-1 Real-Time Stability of OPO-Fat Following Storage at 20°C for 6 Months

Parameter[a]	Acceptable Limit	Baseline	3 Months	6 Months
Lot No. 06222				
Acid Value (mg KOH/g)	0.6	0.2	0.2	0.3
Peroxide Value (mEq/kg)	up to 10	0	3	3
Sensory[b]	>5	10	7	6
Color	≤5.0R/50.0Y	3.2R/20.0Y	3.0R/17.0Y	2.2R/13.0Y
% of total palmitic acid located on *sn*-2 position	≥50	55	55	56
Lot No. 06306				
Acid Value (mg KOH/g)	0.6	0.2	0.1	0.2
Peroxide Value (mEq/kg)	up to 10	0	2	3
Sensory[b]	>5	10	8	7
Color	≤5.0R/50.0Y	1.4R/12.0Y	1.2R/11.0Y	0.9R/9.9Y
% of total palmitic acid located on *sn*-2 position	≥50	56	57	57
Lot No. 06407				
Acid Value (mg KOH/g)	0.6	0.1	0.2	0.2
Peroxide Value (mEq/kg)	up to 10	0	2	2
Sensory[b]	>5	10	8	7
Color	≤5.0R/50.0Y	1.8R/14.0Y	1.7R/14.0Y	1.5R/12.0Y
% of total palmitic acid located on *sn*-2 position	≥50	55	56	57

AOCS = American Oil Chemists' Society.

[a] The results presented in this table were conducted on OPO-Fat prior to the optimization of the refinement step to further reduce the levels of residual 3-MCPD and GE. A real-time stability study is currently being conducted on the same batches of OPO-Fat after they have undergone the optimized refinement step.

[b] Assessed using the AOCS method for Flavor Panel Evaluation of Vegetable Oils (Cg 2-83) (AOCS, 2017).

Table 2.4-2 Stability of OPO-Fat Under Accelerated Storage Conditions (60°C for 9 Weeks)

Parameter[a]	Acceptable Limit	Duration of Storage (Weeks)							
		Baseline	0.75	1.5	3.0	4.5	6.0	7.5	9.0
Lot No. 06222									
Acid Value (mg KOH/g)	0.6	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2
Peroxide Value (mEq/kg)	up to 10	0	2	2	3	2	2	2	2
Sensory[b]	>5	10	9	7	6	6	6	4	3
Color	≤5.0R/50.0Y	3.2R/20.0Y	3.5R/19.0Y	2.6R/17.0Y	2.3R/15.0Y	2.1R/15.0Y	2.0R/14.0Y	2.0R/14.0Y	2.0R/14.0Y
% of total palmitic acid located on *sn*-2 position	≥50	55	55	55	55	56	57	57	57
Lot No. 06306									
Acid Value (mg KOH/g)	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Peroxide Value (mEq/kg)	up to 10	0	2	3	3	3	3	3	3
Sensory[b]	>5	10	9	7	6	6	6	5	3
Color	≤5.0R/50.0Y	1.4R/12.0Y	1.3R/12.0Y	1.1R/11.0Y	1.3R/10.0Y	1.0R/9.9Y	1.0R/9.9Y	1.0R/9.9Y	1.0R/9.9Y
% of total palmitic acid located on *sn*-2 position	≥50	56	56	56	56	55	56	57	57
Lot No. 06407									
Acid Value (mg KOH/g)	0.6	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Peroxide Value (mEq/kg)	up to 10	0	2	3	3	3	3	3	3
Sensory[b]	>5	10	9	7	6	6	6	5	3
Color	≤5.0R/50.0Y	8R/14.0Y	1.4R/12.0Y	1.2R/12.0Y	1.1R/12.0Y	1.1R/12.0Y	1.2R/11.0Y	1.1R/11.0Y	1.0R/11.0Y
% of total palmitic acid located on *sn*-2 position	≥50	55	54	56	55	55	56	57	57

AOCS = American Oil Chemists' Society.

[a] The results presented in this table were conducted on OPO-Fat prior to the optimization of the refinement step to further reduce the levels of residual 3-MCPD and GE. An accelerated stability study is currently being conducted on the same batches of OPO-Fat after they have undergone the optimized refinement step.

[b] Assessed using the AOCS method for Flavor Panel Evaluation of Vegetable Oils (Cg 2-83) (AOCS, 2017).

Part 3. §170.235 Dietary Exposure

3.1 Current Regulatory Status

OPO-Fat is not currently regulated under Title 21 of the Code of Federal Regulations (CFR) for use in food or beverages. However, similar foods (*i.e.*, high 2 palmitic vegetable oils) are recognized as GRAS when used in in infant formula, baby/toddler foods, and general processed foods (GRN Nos. 131 and 192).

3.2 Functionality

OPO-Fat containing a high proportion of palmitic acid occurring at the sn-2 position is intended to replace common vegetable oils in foods.

3.3 Estimated Intakes of OPO-Fat from Proposed Food and Beverages Uses

3.3.1 Methodology

An assessment of the anticipated intake of OPO-Fat as an ingredient under the intended conditions of use (Table 1.3-1) was conducted using data available in the 2017-2018 cycle of the U.S. National Center for Health Statistics National Health and Nutrition Examination Survey (NHANES) (CDC, 2021a,b; USDA, 2021). Specific food uses of OPO-fat evaluated in the current intake analysis are summarized in Table 3.3.1-1. These are similar to the food uses evaluated for InFat® in GRN 192, but with the removal of foods unlikely to contain added oils, and the addition of new types of products on the U.S. market likely to contain added oils. A detailed description of the survey and methodology employed in the intake assessment of OPO-Fat is provided in Appendix D, while an abbreviated summary along with the pertinent results is presented herein.

Table 3-1 Summary of the Individual Proposed Food Uses and Use Levels for OPO-Fat in the U.S.

Food Category (21 CFR §170.3 – U.S. FDA, 2020a)[a]	Food Uses[b]	OPO-Fat Use Levels (g/100 g)[c]
Baked Goods and Baking Mixes	Cakes	0.3-29.1
	Cookies	0.34-35.3
	Grain-Based Crackers	1.21-31.72
	French Toast, Pancakes, and Waffles	0.38-28.71
	Pastries	2.79-41.23
	Pies	4.75-39.25
	Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	0.34-29.07
	Yeast Breads and Rolls	0.82-24.75
Breakfast Cereals	Ready-to-Eat Cereals	0.35-14.1
	Cereal and Nutrition Bars	0.9-32.2
Cheeses	Cheese-Based Spreads and Dips	8.88-21.23
Dairy Product Analogs	Fluid Milk, Imitation	0.04-2.64
	Cream Substitute	2.7-32.92
	Sour Cream, Imitation	19.52

	Yogurt, Non-Dairy	1.8-3.5
	Imitation Cheese	32
	Non-Dairy Ice Cream	8.94
	Non-Milk Based Meal Replacements	3.57-5.56
Fats and Oils	Margarine, and Margarine-Like Spreads	0.06-99.97
	Mayonnaise and Mayonnaise-Type Dressings	0.16-74.85
	Salad Dressings (Regular and Low Calorie)	0.10-57.85
Frozen Dairy Desserts and Mixes	Frozen Yogurt	3.6-6.25
	Ice Cream and Frozen Milk Desserts	0.76-25.26
Gelatins, Puddings, and Fillings	Puddings, Custards and Other Milk Desserts	1.76-24.29
Grain Products and Pastas	Frozen Grain-Based Meals	1.56-14.43
	Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	0.1-44.37
	Grain-Based Patties	4.64
Gravies and Sauces	White Sauces and Milk Gravies	1.07-21.2
Hard Candy	Hard Candy	0.2-23.98
Foods for Infants and Young Children 1 through 3 Years of Age	Infant Formulas	1.94-4.39
	Cereal, Baby Food	0.4-9.9
	Milk Desserts, Baby Food	0.98-2
	Fruits and Fruit Mixtures, Baby Food	0.05-2.24
	Fruit Juices, Baby Food	0.1-0.8
	Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0.02-4
	Vegetable and Vegetable Mixtures, Baby Food	0.1-3.6
	Cookies, Bars, and Nonsweet Crackers, Baby Foods	0.87-28.57
	Grain Mixtures, Baby Food	1.1-2.6
Milk Products	Flavored Milk and Milk Drinks	0.06-13.7
	Milk-Based Meal Replacements	0.6-17.14
	Snack Dips	6.31-45.84
Plant Protein Products	Meat Analogs	0.5-29.52
Soups and Soup Mixes	Grain Based Soups	0.12-6.41
Soft Candy	Candies and Chocolate	0.02-48.84
Snack Foods	Grain-Based Salty Snacks	2.8-58.78

CFR = Code of Federal Regulations; FNDDS = Food and Nutrient Database for Dietary Studies; NHANES = National Health and Nutrition Examination Survey; U.S. = United States.

[a] Food categories were determined using the general food categories in 21 CFR §170.3(n) as a guide (U.S. FDA, 2020a), with the exception of "Foods for infants and young children 1 through 3 years of age" which was assigned its own food category and is named according to 21 CFR §101.12 (U.S. FDA, 2020a).

[b] OPO-Fat is intended for use in unstandardized products and not in foods where standards of identity exist and do not permit its addition.

[c] Range of total fat nutrient values associated with food codes selected for each individual food use. Total fat nutrient values were applied in the assessment assuming OPO-fat would replace 70% of total fat in infant formulas and 100% of total fat in all other proposed food uses. Total fat values associated with food codes from the 2017-2018 NHANES were obtained from the 2017-2018 FNDDS (USDA ARS, 2021).

The NHANES data are collected and released in 2-year cycles with the most recent cycle containing data collected in 2017-2018. Information on food consumption was collected from individuals *via* 24-hour dietary recalls administered on 2 non-consecutive days (Day 1 and Day 2). Total fat nutrient values associated with food codes from the 2017-2018 NHANES were obtained from the United States Department of Agriculture's Food and Nutrient Database for Dietary Studies (FNDDS). These were utilized to determine the amount of fat that would be replaced with OPO-fat under the proposed conditions of use. Sample weights were incorporated with NHANES data to compensate for the potential under-representation of intakes from specific populations and allow the data to be considered nationally representative (CDC, 2021a,b; USDA, 2021). The NHANES data were employed to assess the mean and 90th percentile intake of OPO-Fat for each of the following population groups:

- Infants, ages < 6 months;
- Infants, ages 6 to <12 months;
- Young children, ages 1 to 3 years;
- Children, ages 4 to 11 years;
- Female teenagers, ages 12 to 19 years;
- Male teenagers, ages 12 to 19 years;
- Female adults, ages 20 years and older;
- Male adults, ages 20 years and older; and
- Total non-infant population (ages 1 years and older, and both gender groups combined).

Consumption data from individual dietary records, detailing food items ingested by each survey participant, were collated by computer and used to generate estimates for the intake of OPO-Fat by the U.S. population[4]. Estimates for the daily intake of OPO-Fat represent projected 2-day averages for each individual from Day 1 and Day 2 of NHANES 2017-2018; these average amounts comprised the distribution from which mean and percentile intake estimates were determined. Mean and percentile estimates were generated incorporating survey weights in order to provide representative intakes for the entire U.S. population. "*Per capita*" intake refers to the estimated intake of OPO-Fat averaged over all individuals surveyed, regardless of whether they consumed food products in which OPO-Fat is proposed for use, and therefore includes individuals with "zero" intakes (*i.e.*, those who reported no intake of food products containing OPO-Fat during the 2 survey days). "Consumer-only" intake refers to the estimated intake of OPO-Fat by those individuals who reported consuming food products in which the use of OPO-Fat is currently under consideration. Individuals were considered "consumers" if they reported consumption of 1 or more food products in which OPO-Fat is proposed for use on either Day 1 or Day 2 of the survey.

The estimates for the intake of OPO-Fat were generated by replacing 70% of total fat nutrient values for infant formula food codes, and 100% of total fat nutrient values for all other proposed food uses, together with food consumption data available from the 2017-2018 NHANES dataset. The results of the assessment are presented in Section 3.3.2.

[4] Statistical analysis and data management were conducted in DaDiet Software (Dazult Ltd., 2018). DaDiet Software is a web-based software tool that allows accurate estimate of exposure to nutrients and to substances added to foods, including contaminants, food additives and novel ingredients. The main input components are concentration (use level) data and food consumption data. Data sets are combined in the software to provide accurate and efficient exposure assessments.

3.3.2 Results of Intake Estimates for OPO-Fat

A summary of the estimated daily intake of OPO-Fat from proposed food uses is provided in Table 3.3.2-1 on an absolute basis (g/person/day), and in Table 3.3.2-2 on a body weight basis (mg/kg body weight/day).

The percentage of consumers was high among all age groups evaluated in the current intake assessment; 73.9% of infants 0 to 5 months of age and more than 98.5% of all other population groups consisted of consumers of food products in which OPO-fat is currently proposed for use. The consumer-only estimates are more relevant to risk assessments as they represent exposures in the target population; consequently, only the consumer-only intake results are discussed in detail herein.

Among the total non-infant population (ages 1 year and older), the mean and 90th percentile consumer-only intakes of OPO-fat were determined to be 37.9 and 68.8 g/person/day, respectively. Of the individual population groups, male adults and male teenagers were determined to have the greatest mean consumer-only intakes of OPO-fat on an absolute basis, at 44.0 g/person/day, while male adults had the greatest 90th percentile consumer-only intakes, at 80.8 g/person/day. Infants 6 to less than 12 months of age had the lowest mean and 90th percentile consumer-only intakes of 17.0 and 29.4 g/person/day, respectively (Table 3.3.2-1).

Table 3.3.2-1 Summary of the Estimated Daily Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data)

Population Group	Age Group	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Infants	0 to <6 m	13.3	29.5	73.9	124	18.0	31.4
Infants	6 to <12 m	16.8	29.4	98.5	137	17.0	29.4
Young Children	1 to 3 y	22.7	44.7	99.6	413	22.8	44.7
Children	4 to 11 y	38.1	63.9	100	890	38.1	63.9
Female Teenagers	12 to 19 y	38.7	65.1	99.8	449	38.8	65.1
Male Teenagers	12 to 19 y	44.0	77.6	100	444	44.0	77.6
Female Adults	20 y and older	32.7	60.7	99.9	2,156	32.7	60.7
Male Adults	20 y and older	43.9	80.8	99.7	1,965	44.0	80.8
Total Non-Infant Population	1 y and older	37.8	68.8	99.8	6,317	37.9	68.8

m = months; n = sample size; NHANES = National Health and Nutrition Examination Survey; U.S. = United States y = years.

On a body weight basis, the total non-infant population (ages 1 year and older) mean and 90th percentile consumer-only intakes of OPO-fat were determined to be 620 and 1,246 mg/kg body weight/day, respectively. Among the individual population groups, infants less than 6 months of age were identified as having the highest mean and 90th percentile consumer-only intakes of any population group, of 2,926 and 5,079 mg/kg body weight/day, respectively. Female adults had the lowest mean and 90th percentile consumer-only intakes of 439 and 797 mg/kg body weight/day, respectively (Table 3.3.2-2).

Table 3.3.2-2 Summary of the Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data)

Population Group	Age Group (Years)	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Infants	0 to <6 m	2,162	4,890	73.9	124	2,926	5,079
Infants	6 to <12 m	1,844	3,232	98.5	137	1,873	3,232
Young children	1 to 3 y	1,614	2,904	99.6	403	1,621	2,904
Children	4 to 11 y	1,310	2,296	100	888	1,310	2,296
Female Teenagers	12 to 19 y	642	1,133	99.8	442	643	1,143
Male Teenagers	12 to 19 y	698	1,335	100	441	698	1,335
Female Adults	20 y and older	438	797	99.9	2,138	439	797
Male Adults	20 y and older	501	956	99.7	1,949	502	956
Total Non-Infant Population	1 y and older	619	1,246	99.8	6,261	620	1,246

bw = body weight; m = months; n = sample size; NHANES = National Health and Nutrition Examination Survey; U.S. = United States; y = years.

3.3.3 Intake from Infant Formula

A summary of the consumer-only estimated daily intake of OPO-Fat from the replacement of 70% total fat associated with infant formula food codes in the 2017-2018 NHANES is provided in Table 3.3.3-1 by infant population group. As expected, a significant proportion of infants were determined to be consumers of infant formula (68.3 to 71.5%). Consumer-only intakes of OPO-Fat from the intended conditions of use in non-exempt infant formula were determined to range from 16.7 to 19.3 g/person/day (1.8 to 3.1 g/kg body weight/day) at the mean, and 28.3 to 31.2 g/person/day (3.0 to 5.1 g/kg body weight/day) at the 90th percentile. Similar intake estimates were derived from the intended uses of Betapol® in infant formula (80% fat replacement), of up to 28 g/person/day (5.5 g/kg body weight in a 5-kg infant) at the 90th percentile of energy intake (GRN 191).

Table 3.3.3-1 Summary of Estimated Daily Intakes of OPO-Fat from the Proposed Use in Non-Exempt Infant Formula by Infant Population Group (2017-2018 NHANES Data)

Population Group	Age Group (Years)	Consumers		Consumer-Only Intake (g/person/day)		Consumer-Only Intake (mg/kg bw/day)	
		%	n	Mean	90th Percentile	Mean	90th Percentile
Infants	0 to <6 m	68.3	114	19.3	31.2	3,136	5,101
Infants	6 to <12 m	71.5	98	16.7	28.3	1,842	3,047

bw = body weight; m = months; n = sample size; NHANES = National Health and Nutrition Examination Survey; U.S. = United States.

Based on the highest 90th percentile consumption of OPO-Fat from the intended use in non-exempt infant formula, as described above (*i.e.*, 5.1 g/kg body weight/day), and maximum estimated concentrations of

3-MCPD and GE in infant formula of 0.10 and 0.05 µg/g powder[5], respectively based on the intended uses of OPO-Fat, the maximum dietary intake of 3-MCPD and GE were estimated to be 0.51 and 0.26 µg/kg body weight/day, respectively. These intakes are below the mean exposures to 3-MCPD and GE from commercial infant formula products on the market, which have been reported to range from 1 to 14 µg/kg bw/day for 3-MCPD and from 1 to 3 µg/kg for GE (Spungen *et al*., 2018). Since OPO-Fat will replace a portion of the triglyceride oils that are used in infant formula the intended food uses of OPO-Fat will therefore not increase dietary intake of 3-MCPD and GE from uses in infant formula.

3.3.4 Summary and Conclusions

Consumption data and information pertaining to the individual proposed food uses of OPO-fat were used to estimate the *per capita* and consumer-only intakes of OPO-fat for specific demographic groups and for the total U.S. population. There were a number of assumptions included in the assessment which render exposure estimates that may be considered suitably conservative. For example, it was assumed in the exposure assessment that OPO-fat replaced 70% total fat in infant formula and 100% total fat in all other processed foods. In reality, it is unlikely that OPO-fat will have 100% market penetration in all identified food categories.

In summary, estimated daily intakes of OPO-Fat from the proposed conditions of use, assessed with the most recent release of the NHANES (2017-2018 cycle), are similar to estimates reported for InFat® in GRN 192. On a consumer-only basis, the resulting mean and 90th percentile intakes of OPO-fat by the total non-infant U.S. population (ages 1 year and older) from all proposed food uses, were estimated to be 37.9 g/person/day (620 mg/kg body weight/day) and 68.8 g/person/day (1,246 mg/kg body weight/day), respectively. Among the individual population groups, the highest mean consumer-only intakes of OPO-fat were determined to be 44.0 g/person/day in male adults and male teenagers (equivalent to 502 and 698 mg/kg body weight/day, respectively), while male adults had the greatest 90th percentile consumer-only intakes of 80.8 g/person/day (956 mg/kg body weight/day). Infants 6 to less than 12 months of age had the lowest mean and 90th percentile consumer-only intakes on an absolute basis, of 17.0 g/person/day and 29.4 g/person/day, respectively. When expressed on a body weight basis, younger population groups (infants, young children, and children) had the highest mean and 90th percentile consumer-only intakes of OPO-fat, of 1,310 to 2,926 and 2,296 to 5,079 mg/kg body weight/day, respectively. Female adults had the lowest mean and 90th percentile consumer-only intakes of 439 and 797 mg/kg body weight/day, respectively.

Infant high-level (90th percentile) consumer-only intakes of OPO-Fat from 70% total fat replacement of infant formula food codes in the 2017-2018 NHANES (28.3 to 31.2 g/person/day, or 3.0 to 5.1 g/kg body weight/day), are similar to those calculated in GRN 191 for Betapol® on an energy intake basis (up to 28 g/person/day, or 5.5 g/kg body weight in a 5-kg infant).

Part 4. §170.240 Self-Limiting Levels of Use

OPO-Fat is intended for use at levels providing not more than 70% of the total fat content in infant formula because high 2-palmitic vegetable oils (including OPO-Fat) cannot be used as the sole source of fat in infant

[5] The levels of 3-MCPD and GE from the proposed conditions of use of OPO-fat in infant formula (0.10 and 0.05 µg/g powder, respectively) are below or at maximum levels of the contaminants currently permitted in powdered infant formula in the EU, of 0.125 µg 3-MCPD/g powder and 0.05 µg GE/g powder [Commission Regulation (EU) 2020/1322 of 23 September 2020].

formula, as other vegetable oils will still need to be added to provide an appropriate balance of fatty acids, including the essential fatty acids such as linoleic acid and α-linolenic acid.

OPO-Fat use is intended to be substitutional for all added fats in baby/toddler foods, and in processed foods in general. The addition of OPO-Fat to these foods will be considered self-limiting for technological reasons. The characteristics of OPO-Fat (*e.g.*, melting point) will affect its technological functionalities in food products, and accordingly, their suitability for use as a replacement for other added fats and oils.

Part 5. §170.245 Experience Based on Common Use in Food Before 1958

Not Applicable.

Part 6. §170.250 Narrative and Safety Information

6.1 Introduction

NOG has conducted a scientific procedures GRAS evaluation of the use of OPO-Fat as an ingredient in various conventional food and beverage products, as defined in Part 1.3. NOG's OPO-Fat meets all the defined specifications addressed in Part 2.3.1.

Commercially available infant formulas are most often formulated using edible vegetable oils as the fat source. Although various blends of these vegetable oils can be selected to model the fatty acid profile of human breast milk, distinct differences remain in the structure of the individual triglyceride species. Vegetable oils tend to contain unsaturated fatty acids in the *sn*-2 position and saturated fatty acids (*e.g.*, palmitic acid) in the *sn*-1 and *sn*-3 positions (Karupaiah and Sundram, 2007; Innis, 2011; Delplanque *et al.*, 2015; Zou *et al.*, 2016). This is in contrast to human breast milk, where approximately 70% of the palmitic acid, the main saturated fatty acid present, is esterified at the *sn*-2 position (Innis, 2011; Bar-Yoseph *et al.*, 2013). Approximately 50% of the triglycerides in human breast milk contains palmitic acid at the *sn*-2 position (Innis, 2011). High 2-palmitic vegetable oils were developed to provide triglycerides for use in infant formula with structures that are more representative of those present in human breast milk, which can have important implications on their digestibility and utilization (see Section 6.2).

The determinations and GRAS conclusions of high 2-palmitic vegetable oils produced by other manufacturers have already been notified to the U.S. Food and Drug Administration (FDA) and filed with "no questions" status for their intended uses as a replacement for up to 70 to 80% of the fat content in infant formula (Betapol®, InFat®), and as a replacement for all added fats in baby/toddler foods and general processed foods (InFat®) (GRN 131, GRN 192). The OPO-Fat produced by NOG is comparable in both the production process used and the final composition as these other high 2-palmitic vegetable oils (see Part 2.2 and 2.3), and OPO-Fat is intended for the same food uses as InFat®. Accordingly, the safety of OPO-Fat under its intended conditions of use can be supported by the same dataset used to support the GRAS status of Betapol® and InFat®. Since the GRAS Notices for these high 2-palmitic vegetable oils were filed in 2003 for Betapol®, and 2006 for InFat®, an updated review of the literature pertaining to their safety through October 2018 was conducted. The available preclinical and clinical data on high 2-palmitic vegetable oils, as identified from a search of the published literature, are described below in Section 6.3 and 6.4 as relevant to the safety of OPO-Fat

6.2 Absorption, Distribution, Metabolism and Excretion

Vegetable oils commonly consumed in the diet are composed primarily of glycerides of fatty acids (largely triglycerides) (Hall, 2011; Codex Alimentarius, 2017). Small amounts of other lipids (*e.g.*, phosphatides), unsaponifiable constituents, and free fatty acids may be present in these oils (Codex Alimentarius, 2017). The digestion and absorption of dietary triglycerides has been well established (Mu and Hoy, 2004; Iqbal and Hussain, 2009; Hall, 2011). Following ingestion, small amounts of triglycerides can be digested by the action of lingual lipase and gastric lipase (Barrett *et al*., 2010; Hall, 2011). However, this is generally considered to be of minimal quantitative significance, with gastric lipase reported to account for only 10 to 30% of the hydrolysis of dietary triglycerides in healthy adult humans (Abrahamse *et al.*, 2012; Bourlieu *et al.*, 2014; Poquet and Wooster, 2016). It has been suggested that gastric lipolysis may be more important for fat digestion in infants, given their underdeveloped pancreatic functions and accordingly, lower concentrations of the pancreatic lipases and bile salts (Abrahamse *et al.*, 2012; Bourlieu *et al.*, 2014; Nguyen *et al.*, 2015; Poquet and Wooster, 2016). Digestion of dietary fats occurs primarily within the small intestine through the coordinated actions of pancreatic lipases (*e.g.*, pancreatic triglyceride lipase, pancreatic lipase-related protein 2, carboxyl ester lipase, bile salt-stimulated lipase), together with the emulsification properties of bile salts (Barrett *et al*., 2010; Lindquist and Hernell, 2010; Hall, 2011; Innis, 2011; Bourlieu *et al.*, 2014; Nguyen *et al.*, 2015). Fatty acids on the outer carbon atoms of triglycerides (*i.e.*, *sn*-1 and *sn*-3 positions) are preferentially hydrolyzed, resulting in the formation of free fatty acids and 2-monoglycerides (Karupaiah and Sundram, 2007; Barrett *et al*., 2010; Lindquist and Hernell, 2010; Hall, 2011; Innis, 2011; Bourlieu *et al.*, 2014).

Fatty acids located at the *sn*-2 position of triglycerides are preserved throughout the digestive process and are absorbed as the *sn*-2 monoglyceride (Karupaiah and Sundram, 2007; Innis, 2011; Michalski *et al.*, 2013). With regard to the free fatty acids that are hydrolyzed and released, their absorptive fate depends on their chemical structure (Berry, 2009; Innis, 2011). Fatty acids with less than 10 carbon atoms are water-soluble enough that they can pass through the enterocyte by passive diffusion and directly enter the portal vein in an unmodified form (Karupaiah and Sundram, 2007; Barrett *et al*., 2010; Hall, 2011). Fatty acids that contain more than 12 carbon atoms are too insoluble to pass directly into circulation, and instead, they are re-esterified into triglycerides through acylation of the *sn*-2 monoglycerides and are further assembled into chylomicrons in the enterocytes, before being released into lymphatic system for distribution into systemic circulation (Karupaiah and Sundram, 2007; Barrett *et al.,* 2010; Hall, 2011).

The characteristics of the fatty acids (*e.g*., chain length) and their positional distribution within the triglyceride structure may be a determinant of their digestibility and absorption. Within the intestines, unesterified long-chain saturated fatty acids (*e.g.*, palmitic acid) have a tendency to combine with divalent cations such as calcium to form insoluble soaps (Mu and Porsgaard, 2005; Innis, 2011). These insoluble soaps cannot be absorbed and consequently are excreted in the feces, resulting in a loss of fat and mineral absorption (Mu and Porsgaard, 2005; Innis, 2011). This is particularly relevant with respect to infant nutrition (Berry, 2009; Innis, 2011; Zou *et al.,* 2016, 2017). Although dietary fat is generally considered to be efficiently absorbed among healthy human adults, with less than 5% of the dietary lipids excreted in the stool, infants may fail to absorb 10 to 15% (or more) of the ingested fats (Barrett *et al*., 2010; Lindquist and Hernell, 2010; Wang *et al.*, 2013). For this reason, high 2-palmitic vegetable oils containing an increased proportion of palmitic acid at the *sn*-2 position were developed for use in infant formula with the goal of resembling the triglyceride structures that are naturally present in human breast milk, and accordingly, increase their absorption efficiency in infants.

6.3 Toxicological Studies

As described in Part 6.1, toxicological studies conducted with other high 2-palmitic vegetable oil products have been included to support the safety of NOG's OPO-Fat due to the similarities in product identity (see Part 2.1) and manufacturing process (see Part 2.2). Briefly, high 2-palmitic vegetable oil products are generally produced using palm stearin and a source of oleic acid such as high oleic sunflower oil or palm kernel oil, which are subjected to an interesterification reaction catalyzed by a suitable lipase enzyme to rearrange the positional distribution of the fatty acids on the triglyceride backbone. Due to these similarities, the Betapol® and InFat® products used in the following studies are expected to contain levels of the 3-MCPD and GE impurities that are representative of NOG's OPO-Fat product. Moreover, a study by Beekman *et al*. (2020) was conducted to evaluate the presence of these contaminants in infant formula products purchased in the US between 2017 and 2019 (resulting from the use of refined oils during formulation), which indicated that the contaminant concentrations in these products have largely been reduced since effective industrial mitigation strategies have been put into effect.

6.3.1 Two-Generation Rat Feeding Study Conducted with Betapol®

A 2-generation rat feeding study investigated the safety of high 2-palmitic vegetable oil was reported by Spurgeon *et al.* (2003). Although this study was conducted with Betapol®, the results are considered relevant in supporting the safety of InFat® (as described in GRN 192), and by extension the safe use of NOG's OPO-Fat, given the similarities across the production processes and composition of these materials. In this study, 4-week old (±1 day) Specific Pathogen Free rats (Crl:CD[SD] BR VAF/Plus strain) were fed diets containing 0, 1.5, 7.5, or 15.0% Betapol®. The diets were standardized to a fat content of 15% using palm olein. The study included a comparative control group where rats were fed diets containing 15% of palm olein. Another control group was fed a standard laboratory animal diet (LAD) with a fat content ranging between 2.3 to 4.7%. The diets were administered to the parental generation (F_0) from 6 weeks of age (n=32/sex/group) until weaning of the F_1 generation. Animals in the F_1 generation (n=28/sex/group), in addition to the exposure received from conception to weaning, were administered the diets from 4 weeks of age until weaning of the F_2 generation. All animals were checked at least 2 times daily. Body weights, food consumption and water consumption were recorded regularly throughout the study. Blood samples were collected at termination for each generation for assessment of standard hematology and serum biochemistry parameters. The animals were also subjected to macroscopic examination at termination. Specified organs were collected and weighed, and a full range of tissues were preserved for histopathological examination.

Spurgeon *et al.* (2003) stated that the maximum inclusion rate of 15% oil in the diet was based on "preliminary feasibility studies". Although no further details were provided, there is a dose-range finding study that is described in detail in the GRAS Notice submitted for Betapol® (GRN 131). In this dose-range finding study, no adverse effects were reported when Betapol® was administered at concentrations of up to 15% in the feed of male and female rats (number of animals not reported) for 4 weeks prior to mating, and then through mating, gestation, and lactation, and further to selected offspring through up to 6 weeks of age. Similarly, in the main 2-generation study, the dietary administration of Betapol® was well tolerated by the animals. The study authors reported that there were no biologically relevant differences in fertility or reproductive parameters in animals receiving Betapol® compared to the control groups. Although several deaths were reported in the animals receiving Betapol® (F_0 generation: n=2 in the 7.5% group; F_1 generation: n=3, 2, and 1 in 1.5%, 7.5%, and 15% groups, respectively), a similar frequency was reported in the comparative control group (n=1 in the F_0 generation and n=3 in the F_1 generation) and LAD group (n=1 in the F_0 generation). As such, the study authors noted that the none of the deaths were thought to be related to Betapol®. Some effects were consistently reported among the animals receiving Betapol® and

the comparative control group when compared to animals in the standard LAD group, suggesting that they were attributed to the higher fat content of the test diets. These effects included observations of pale fecal pellets, and lower food and water consumption. The values for hematology or serum biochemistry parameters in animals receiving Betapol® were also consistent with those reported in the comparative control group, and/or with those in the standard LAD group. One notable exception is the statistically significant higher triglyceride levels in F_1 males (after weaning) in all Betapol® treated groups when compared against both control groups. No such effects were reported in the F_1 males before weaning, in the F_0 males, or in the females, and total lipids were not elevated. Upon necropsy, the only consistent observation across the adults of both the F_0 and F_1 generations was a small but dose-related increase in the absolute weight of the ovaries, which reached statistical significance in animals receiving diets containing 15% Betapol® when compared against the comparative control group. The study authors concluded that this was not toxicologically relevant since no microscopic changes were seen in the ovaries, and no changes in fertility and reproductive performance or sexual maturation were reported. The study authors concluded that "*there were no evidence of the presence of an unexpected toxicant*" (Spurgeon *et al.*, 2003), and in the GRAS Notice submitted for Betapol® (GRN 131), it was concluded that the no-observed-adverse effect level (NOAEL) in this study was 15% Betapol® in the diet, which was considered equivalent to approximately 10 g Betapol®/kg body weight/day by the notifier.

6.3.2 Other Studies

A number of studies conducted to evaluate the effects of *sn*-2 palmitate on fat absorption and metabolism in animals, including rats (Lien *et al.*, 1993, 1997; de Fouw *et al.*, 1994; Aoe *et al.*, 1997) and newborn piglets (Innis *et al.*, 1993a,b, 1995, 1996; Rioux *et al*., 1997), were described in GRN 131 and GRN 192. These studies demonstrate that palmitic acid esterified at the *sn*-2 position, instead of the *sn*-1 and *sn*-3 positions, may be more efficiently absorbed in the gastrointestinal tract and may be accompanied by more complete fat absorption overall. One study conducted with radiolabeled triglycerides suggest the absorption and excretion of [^{14}C]POO and O[^{14}C]PO to be similar in suckling and weanling rats, though a statistical analysis was not conducted due to the small number of animals employed (Sanders *et al.,* 2001). Although these studies were designed to evaluate nutritional effects and not toxicity *per se*, no adverse effects on growth or development were reported.

The results of feeding studies in rabbits reported by Kritchevsky and colleagues (1998a,b, 2000) suggested that atherogenicity may be increased when the level of palmitic acid at the *sn*-2 position of the dietary fat is increased, but without significantly affecting the levels of blood lipids or lipoproteins. These studies have been reviewed in GRN 192, and by Hunter (2001), who reported these effects seem to be limited to rabbits, as similar studies conducted in hamsters did not reveal any effects on blood lipoprotein levels or atherogenicity. The studies conducted by Kritchevsky and colleagues in rabbits administered various types of interesterified fats and oils (*e.g.*, cottonseed oil, lard, tallow, palm oil) that had been modified to increase the level of palmitic acid at *sn*-2 in comparison to their native counterparts. The relevance of these findings to OPO-Fat obtained from the interesterification of palm stearin with oils enriched in oleic acid (*e.g.,* high oleic sunflower oil, palm kernel oil) is unclear.

More recent publications were identified in which *sn*-2 palmitate was orally administered to rats (Wan *et al.*, 2016; Bar-Maisels *et al*., 2017) and mice (Lu *et al.*, 2013). These studies were conducted to largely evaluate mechanistic endpoints related to the potential health benefits of *sn*-2 palmitate (*e.g.*, bone health, enterocolitis, and intestinal microbiota), and are of limited relevance to the safety assessment of OPO-Fat. No overt evidence of toxicity or adverse effects was reported in these studies, as described further below.

Bar-Maisels *et al.* (2017) reported on the effects of InFat® on bone length and bone in pre-pubertal (23 days old) male Sprague-Dawley rats (10/group). A preliminary tolerability experiment was first conducted in which the animals were administered diets containing InFat® or control diet *ad libitum* for 30 days. The diets were matched in composition except for the fat source. The total fat content and fatty acid composition were comparable between the 2 diets, with a similar content of palmitic acid in the InFat® diet (13.9%) as the control diet (14.4%). The proportion of palmitic acid at the *sn*-2 position differed, being 53.0% in the InFat® diet and 12.9% in the control diet. At the end of this preliminary experiment, the animals were euthanized, and blood samples were collected for analysis of serum chemistry parameters. There were no statistically significant differences between the control and the InFat® groups in body weight or weight gain, in the absolute weights of the liver, heart, lungs or kidney (relative weights not reported), or in bone growth (humerus length and epiphyseal growth plate [EGP] height). No significant differences in serum chemistry parameters were reported between the control and InFat® groups. The study authors reported that both the control and InFat® diets in this preliminary experiment were "very well tolerated by the rats, with no adverse effects". Another experiment was conducted by the study authors to examine whether the InFat® diet improves the efficiency of nutrition-induced catch-up growth. Pre-pubertal male rats (23 days of age) were first subjected to 17 days of food restriction where intake of a standard rat chow fed was limited to 60% of the normal daily intake. The animals (8/group) were then randomly allocated to receive either the control diet or InFat® diet *ad libitum* for 9 days. No significant differences were reported in body weight, weight gain, or serum chemistry parameters between the animals administered the control or InFat® diets. Some improvements in parameters related to bone growth (humerus length, EGP height) and bone quality/microstructure were reported.

Lu and colleagues (2013) examined the effects of InFat® in an established animal model of enterocolitis. Muc2 deficient ($Muc2^{-/-}$) mice were administered either a high beta-palmitate fat (HBPF) diet containing InFat®, a diet containing palm oil with palmitic acid enriched at the *sn*-1,3 positions (high alpha-palmitate fat diet [HAPF]), or a standard diet containing soybean oil as the fat source. The animals (3/sex/group) were administered the diets *ad libitum* for 5 weeks after weaning. The total fat content across all 3 diets were similar, but the content of palmitic acid was higher in the HBPF and HAPF diets (approximately 17%) compared to the standard diet (11%), and the proportion of total palmitic acid located at the *sn*-2 position also differed, being reported at 50.4% in the HBPF diet, 11.0% in the HAPF diet, and 6.3% in the standard diet. There were no statistically significant differences in food intake or body weight across the 3 groups throughout the feeding period. The extent of intestinal erosions and morphological damage in the animals fed the HBPF diet were comparable to those fed the standard diet, whereas intestinal damage was worsened in the animals administered the HAPF diets. The study authors concluded that the HBPF diets limited the extent of intestinal mucosal damage response and controlled the inflammatory response in $Muc2^{-/-}$ mice by inducing an immunosuppressive regulatory T cell response.

Wan *et al.* (2016) administered diets containing different levels of palmitic acid (PA) esterified to the *sn*-2 position for 4 weeks to 21-day old male Sprague-Dawley rats. The animals (12/group) received either a low *sn*-2 PA diet (12.1% of PA at *sn*-2) containing palm olein, a medium *sn*-2 PA diet (40.4% PA at *sn*-2) containing 30% palm olein and 70% of a high *sn*-2 fat, and a high *sn*-2 PA diet (56.3% PA at *sn*-2) containing only high *sn*-2 fat. The high *sn*-2 PA fat tested in this study was produced by the study authors by enzymatic interesterification of shortening fat with oleic acid. The shortening fat was also produced by the study authors by the chemical interesterification of blends of palm stearin with high oleic sunflower oil. Body weight and food consumption were recorded weekly, and fecal samples were collected for 3 days after the feeding experiments. No statistically significant differences in food intake, body weight, body mass gain, or fat deposition was reported across the 3 groups at the end of the study. Administration of the high *sn*-2 fat diet significantly reduced total fecal content of fatty acid soaps and calcium when compared to the medium or low *sn*-2 fat diets. Compared to animals in the low and medium *sn*-2 fat groups, animals in the high *sn*-2

fat diets had significantly higher levels of total short-chain fatty acids (SCFA), acetic acid, and butyric acid in the feces, which was suggested by the authors to be at least in part related to the increased abundance of SCFA-producing species (*e.g.*, *Blautia* and *Allobaculum*) in the gut microbiota. Although the overall profile of the gut microbiota was not altered by the high *sn*-2 PA diet, the study authors concluded that a high *sn*-2 PA diet could potentially improve SCFA production, which might have a beneficial effect on host intestinal health.

6.4 Human Studies

6.4.1 Infant Feeding Studies

OPO-Fat is specified to contain >50% of the palmitic acid at the *sn*-2 position, which is similar to the specification limits established for Betapol® (≥43%) and InFat® (>52%), and under its intended conditions of use in non-exempt infant formula, it will constitute up to 70% of the fat content. Published studies evaluating the safety, and tolerance of 2-palmitic vegetable oils for use in infant formula were considered applicable to the GRAS evaluation of OPO-Fat.

The administration of infant formula containing high 2-palmitic vegetable oils has been evaluated in term and pre-term infants and these studies are summarized in Table 6.4.1-1. The studies were largely conducted with infant formula containing either Betapol® or InFat®, or otherwise an unspecified source of high 2-palmitic vegetable oil. Palmitic acid represented 15 to 27% of the total fatty acid content in the formulas. The proportion of palmitic acid esterified at the *sn*-2 position in the standard control infant formulas was generally low at 6 to 17%. In contrast, the test formulas containing high 2-palmitic vegetable oils typically had 40 to 60% of the palmitic acid esterified at the *sn*-2 position, though some studies had levels as high as 74 to 76% (Carnielli *et al.*, 1995a; Lucas *et al.*, 1997).

Findings from these studies demonstrate that infant formula containing high-2 palmitic vegetable oils are well tolerated and produce non-inferior growth patterns relative to infants consuming standard infant formula preparations. No adverse effects attributed to *sn*-2 oils were reported. These studies suggest that increasing the proportion of palmitic acid at *sn*-2 may reduce the formation of fatty acid soaps and fecal loss of palmitic acid and calcium. In addition to the growth and safety studies listed in Table 6.4.1-1, studies evaluating the effects of infant formula containing high 2-palmitic vegetable oil in conjunction with dietary fiber ingredients (*e.g.*, galacto-oligosaccharides, long-chain fructo-oligosaccharides, oligofructose) were identified during the literature search (Savino *et al.*, 2003, 2005, 2006; Schmelzle *et al.*, 2003; Bongers *et al.*, 2007; Hays *et al.*, 2016; Zhong *et al.*, 2016; Civardi *et al.*, 2017; Mao *et al.*, 2018). In these studies, formulas containing high 2-palmitic vegetable oils were well-tolerated and no adverse effects on growth were reported.

The safety of triglycerides with palmitic acid predominately in the *sn*-2 position was evaluated recently by the European Food Safety Authority (EFSA) Panel on Dietetic Products, Nutrition and Allergies (NDA Panel). In their *Scientific Opinion on the essential composition of infant and follow-on formulae*, the EFSA NDA Panel concluded that: "*There are no adverse effects reported of the use of TAG* [triacylglycerol] *with palmitic acid predominantly esterified in the sn-2 position in IF* [infant formula] *and/or FOF* [follow-on formula] *instead of other TAGs"* (EFSA, 2014).

Table 6.4.1-1 Clinical Studies with High 2-Palmitic Vegetable Oils

Main Study Objectives	Study Population	Study Design	Test Groups	Duration of Intervention	Safety-Related Endpoints[a]	Reference
Studies Reviewed in GRN 131 and GRN 192						
To examine the effects of Betapol® on fat absorption and mineral balance	Pre-term infants (n=12) Gestational age of 28 to 32 weeks at study initiation	Randomized, controlled, blinded, cross-over	1. Control IF - 26% PA, 12.7% of PA at *sn*-2 2. IF with Betapol® - 26% PA, 76.1% of PA at *sn*-2	1 week (no washout)	• NSD intake of formula • NSD total fecal output, urine production, mean intestinal transit time • SS ↑ absorption of SFAs • SS ↓ fecal excretion of Ca • SS ↑ urinary excretion of Ca, SS ↓urinary excretion of P	Carnielli *et al.* (1995a)
To examine the effects of Betapol® on fat absorption and plasma lipids	Pre-term infants (n=7) Gestational age of 28 to 32 weeks at study initiation	Randomized, controlled, double-blinded, cross-over	1. Control IF - 25.7% PA, 9.8% of PA at *sn*-2 2. IF with Betapol® - 25.4% PA, 58.0% of PA at *sn*-2	1 week (no washout)	• SS ↑ proportion of PA in plasma sterol esters, and as TGs and free fatty acids in plasma • SS ↓ fecal excretion of PA and C18:0	Carnielli *et al.* (1995b)
To examine the effects of Betapol® on fat absorption and mineral balance	Healthy term infants (M only) Enrolled at birth	Randomized, controlled, blinded, parallel	1. Control IF - 19.9% PA, 13% of PA at *sn*-2 - n=9 2. Intermediate IF - 24.0% PA, 39% of PA at *sn*-2 - n=9 3. IF with Betapol® - 23.9% PA, 66% of PA at *sn*-2 - n=9	5 weeks	• NSD intake of formula • NSD in body weight, length, head circumference between groups at baseline or at time of the fat/mineral balance study (~4 weeks of age) • NSD urine production, mean intestinal transit time • SS ↓ fecal production and SS ↓ fecal fat content; NSD in fecal water content • SS ↑ absorption of SFAs • SS ↓ fecal excretion of Ca • None of the infants had watery stools	Carnielli *et al.* (1996)

Table 6.4.1-1 Clinical Studies with High 2-Palmitic Vegetable Oils

Main Study Objectives	Study Population	Study Design	Test Groups	Duration of Intervention	Safety-Related Endpoints[a]	Reference
To examine the effects of Betapol® on skeletal mineral deposition and stool hardness	Healthy term infants (M&F) Enrolled within the first 8 days of life	Randomized, controlled, double-blinded, parallel	1. Breastfed infants - n_i=120; n_r=109 2. Control IF - 19.6% PA, 12% of PA at *sn*-2 - n_i=103; n_r=76 3. IF with Betapol® - 20.1% PA, 50% of PA at *sn*-2 - n_i=100; n_r=75	12 weeks	• NSD in anthropometric measures (body weight, length, head circumference, *etc*.) at baseline, 3, 6, and 12 weeks between formula groups • SS ↓ excretion of soap fatty acids in feces, and softer stools were reported • NSD in number of reported URT infections, LRT infections requiring antibiotics, visits to the family doctor, hospital outpatient visits, or hospital admissions	Kennedy *et al.* (1999)[b]
To examine the effects of Betapol® on fat absorption	Pre-term infants (M&F) Gestational age less than 35 weeks at study initiation	Randomized, controlled, double-blinded, parallel	n=30 total (10/group) 1. Control IF - 14.7% PA, 8.4% of PA at *sn*-2 2. Intermediate IF - 23.9% PA, 27.8% of PA at *sn*-2 3. IF with Betapol® - 23.9% PA, 73.9% of PA at *sn*-2	3 weeks	• SS ↑ absorption of PA • SS ↑ absorption of C18:0 • SS ↓ excretion of fat as Ca soaps in feces • SS ↑ absorption of Ca Note: refer to publication for details on the control groups against which the Betapol® test formula was reported to have SS differences.	Lucas *et al.* (1997)
To examine the effects of Betapol® on fat absorption and plasma lipids	Healthy term infants (M&F) <72 hours old at study initiation	Randomized, controlled, parallel	1. Breastfed infants - 23.1% PA, 81% of PA at *sn*-2 - n_i=40; n_r=22 2. Control IF - 27.2% PA, 6% of PA at *sn*-2 - n_i=22; n_r=19 3. IF with Betapol® - 24.8% PA, 39% of PA at *sn*-2 - n_i=25; n_r=17	120 days	• NSD in body weight or weight gain, length, head circumference across all groups throughout the study • ≥50% of the PA at *sn*-2 position is conserved through digestion, absorption, and synthesis of chylomicron TGs • SS ↑ plasma apo B, and SS ↓ HDL-cholesterol and apo A-1 *vs*. control IF and breastfed infants	Nelson and Innis (1999); Innis and Nelson (2013)[c]

Studies Published Since the Submission of GRN 131 and GRN 192

Table 6.4.1-1 Clinical Studies with High 2-Palmitic Vegetable Oils

Main Study Objectives	Study Population	Study Design	Test Groups	Duration of Intervention	Safety-Related Endpoints[a]	Reference
To examine the effects of InFat® on fat absorption (Bar-Yoseph *et al.*, 2016) To examine the effects of InFat® on stool characteristics, crying, and sleeping patterns (Bar-Yoseph *et al.*, 2017)	Healthy term infants (M&F) <14 days old at study initiation	Randomized, controlled, double-blind, parallel	1. Breastfed infants - n_i=57; n_r=48 2. Control IF - 20.8% PA, 13% of PA at *sn*-2 - n_i=57; n_r=55 3. IF with InFat® - 20.3% PA, 43% of PA at *sn*-2 - n_i=57; n_r=56	24 weeks	• NSD intake of formula • NSD in body weight, length, or head circumference • NSD in stool frequency or consistency at 6 or 12 weeks (24 weeks NR) • SS ↓ fecal fatty acid excretion, SS ↓ fecal dry weight, SS ↓ fecal excretion *vs*. control IF based on stool samples collected at Week 6	Bar-Yoseph *et al.* (2016, 2017)
To investigate the effects of InFat® on growth, bone mineral content, and stool consistency	Healthy term infants (M&F) Between 1 to 7 days old at enrollment	Randomized, controlled, double-blind, parallel	1. Control IF - 22.0% PA, 16% of PA at *sn*-2 - n_i=162; n_r=137 (4 months) 2. IF with InFat® (EF-1) - 21.7% PA, 43% of PA at *sn*-2 - n_i=166; n_r=143 (4 months) 3. IF with InFat® (EF-2) - 19.8% PA, 51% of PA at *sn*-2 - n_i=160; n_r=127 (4 months)	4 months Follow-up also conducted at 12 months of age.	• NSD intake of formula • NSD in body weight or head circumference across all groups; a slight SS ↑ in body length was observed in EF-1 and EF-2 • Weight gain in EF-1 and EF-2 were non-inferior *vs*. control IF • NSD in body composition • SS softer stools observed for up to 2 months, but not at 3 or 4 months • SS ↓ incidence of respiratory AEs for EF-2 *vs*. control; NSD in antibiotic use • SS ↑incidence of GI AEs in EF-1 (53%) *vs*. control (39.5%), but not EF-2 (39.4%)	Béghin *et al.* (2018)
To investigate the effects of InFat® on bone strength (Litmanovitz *et al.*, 2013) To investigate the effects of InFat® on infant crying patterns and stool characteristics (Litmanovitz *et al.*, 2014)	Healthy term infants (M&F) <14 days old at study initiation	Randomized, controlled, double-blind, parallel	1. Breastfed infants - n_i=25; n_r=22 2. Control IF - 19% PA, 14% of PA at *sn*-2 - n_i=28; n_r=21 3. IF with InFat® - 22% PA, 44% of PA at *sn*-2 - n_i=30; n_r=23	12 weeks	• NSD intake of formula • NSD in body weight or weight gain, length, or head circumference • NSD in stool frequency, stool consistency, or % of infants with hard stools	Litmanovitz *et al.* (2013, 2014)

Table 6.4.1-1 Clinical Studies with High 2-Palmitic Vegetable Oils

Main Study Objectives	Study Population	Study Design	Test Groups	Duration of Intervention	Safety-Related Endpoints[a]	Reference
To investigate the effects of *sn*-2 palmitate (brand not specified) on fat excretion, stool consistency, and gastrointestinal tolerance	Healthy term infants (M&F) Between 25 to 45 days old at enrollment	Randomized, controlled, double-blind, parallel	1. Breastfed infants - n_i=55; n_r=49 2. Control IF - 21.1% PA, 12.6% of PA at *sn*-2 - n_i=54; n_r=46 3. IF with *sn*-2 palmitate (IF-1) - 22.5% PA, 38.9% of PA at *sn*-2 - n_i=56; n_r=51 4. IF with *sn*-2 palmitate plus OF (IF-2) - 22.5% PA, 40.8% of PA at *sn*-2 - n_i=55; n_r=49	28 days	• Z-scores for body weight, length, or head circumference were <0.2 SD from WHO growth standards • SS ↓ fecal excretion of PA as fatty acid soaps in IF-1 and IF-2 *vs*. control IF • NSD in stool consistency or frequency between IF-1 and control IF • Parentally rated of GI Symptom Burden Index Score were similar across all groups • Frequency of physician-reported AEs were similar across all groups, and none of the serious AEs were considered study-related • All formula fed infants had urine osmolality and specific gravity within normal range • One case of diarrhea reported in the IF-1 group was not considered study-related	Nowacki *et al.* (2014)

Table 6.4.1-1 Clinical Studies with High 2-Palmitic Vegetable Oils

Main Study Objectives	Study Population	Study Design	Test Groups	Duration of Intervention	Safety-Related Endpoints[a]	Reference
To investigate the effects of *sn*-2 palmitate (Betapol®) on stool composition and characteristics	Healthy term infants (M&F) Between 7 to 14 days old at enrollment	Randomized, controlled, double-blind, parallel	1. Breastfed infants - n_i=75; n_r=73 2. Control IF - 21.3% PA, 11.7% of PA at *sn*-2 - n_i=75; n_r=74 3. IF with *sn*-2 palmitate (IF-1) - 22.8% PA, 35.9% of PA at *sn*-2 - n_i=74; n_r=72 4. IF with *sn*-2 palmitate plus 3 g/L OF (IF-2) - 23.0% PA, 36.6% of PA at *sn*-2 - n_i=76; n_r=75 5. IF with *sn*-2 palmitate plus 5 g/L OF (IF-3) - 23.2% PA, 36.9% of PA at *sn*-2 - n_i=75; n_r=75	8 weeks	• Mean Z-scores for body weight, length, or head circumference were similar across all groups • SS ↓ fecal excretion of PA, C12:0 and C14:0 as fatty acid soaps in IF-1, IF-2, and IF-3 *vs*. control IF • SS ↓ total stool fatty acid soaps in IF-1, IF-2, and IF-3 *vs*. control IF • SS ↓ fecal excretion of Ca in IF-2 and IF-3 *vs*. control IF • SS softer stools and fewer formed stools in IF-1, IF-2, and IF-3 *vs*. control IF • NSD in daily number of bowel movements • Scores on the Infant Gastrointestinal Symptom Questionnaire were comparable across all groups • Frequency of physician-reported AEs were similar across all groups; GI-related AEs were slightly more common in formula fed *vs*. breastfed infants	Yao *et al.* (2014)

Table 6.4.1-1 Clinical Studies with High 2-Palmitic Vegetable Oils

Main Study Objectives	Study Population	Study Design	Test Groups	Duration of Intervention	Safety-Related Endpoints[a]	Reference
To investigate the effects of InFat® on the intestinal microbiota profile	Healthy term infants <7 days old at study initiation	Randomized, controlled, double-blind, parallel	1. Breastfed infants - n_i=14; n_r=12 2. Control IF - 19% PA, 14% of PA at *sn*-2 - n_i=8; n_r=7 3. IF with InFat® - 22% PA, 44% of PA at *sn*-2 - n_i=14; n_r=11	6 weeks	• NSD intake of formula • NSD in body weight, length, or head circumference	Yaron *et al.* (2013)

↑ = increase; ↓ = decrease; AEs = adverse events; Ca = calcium; F = females; GI = gastrointestinal; GRN = Generally Recognized as Safe Notice; HDL = high-density lipoprotein; IF = infant formula; LRT = lower respiratory tract; M = males; n_i= number randomized; n_r= number completed; OF = oligofructose; PA = palmitic acid; NR = not reported; NSD = no statistically significant difference; P = phosphate; SD = standard deviation; SFAs = saturated fatty acids; SS = statistically significant; TGs = triglycerides; URT = upper respiratory tract; WHO = World Health Organization.

[a] The outcomes described in this table refers to comparisons made between the group receiving high 2-palmitic vegetable oil *versus* the control group receiving a standard IF, unless otherwise stated.

[b] A follow-up study was conducted to investigate the effects of administering formula containing Betapol® on bone health when the children reached 10 years of age, the results of which are published as Fewtrell *et al.* (2013).

[c] The publication by Innis and Nelson (2013) reports additional endpoints collected from the same study population as the one described by Nelson and Innis (1999).

6.4.2 Studies in Adults

Studies conducted in animals and infants suggest that the digestion and absorption of dietary triglycerides containing long-chain saturated fatty acids such as palmitic acid may be influenced by their positional distribution on the triglyceride backbone, but this does not appear to be the case in human adults (Kubow, 1996; reviewed by Karupaiah and Sundram, 2007; Berry, 2009). Berry (2009) reported there is evidence to suggest that human adults can efficiently absorb most dietary fatty acids, whether as non-esterified fatty acids or as the 2-monoacylglycerols.

Zampelas *et al.* (1994) reported on a randomized cross-over study in 16 healthy male adults (mean ± standard deviation age: 24.8±2.6 years). The participants received a liquid meal replacement containing 40 g of a fat blend, either Betapol® (30.4% palmitic acid; 73% of palmitic acid at the *sn*-2 position) or a control fat blend containing mainly palm olein (29.9% palmitic acid; 6% of the palmitic acid at the *sn*-2 position). The test articles were consumed following an overnight fast on 2 separate occasions that were separated by a 2-week washout period. Blood samples were collected prior to the consumption of the test articles, and at specified intervals over a 6-hour period thereafter for evaluation of post-prandial metabolic processes. Ingestion of Betapol® produced similar changes in the plasma concentrations of total triglycerides, chylomicron-rich triglycerides, and chylomicron-poor triglycerides as the control fat blend, with no significant differences reported in the area-under-the-curve, peak concentrations, or time-to-peak concentrations for the postprandial triglyceride response. No significant differences were reported either in the plasma concentrations of non-esterified fatty acids, ketones, glucose, cholesterol, insulin and gastric inhibitory polypeptide hormones following ingestion of Betapol® *versus* the control fat blend. The study authors concluded that acute administration of Betapol® does not affect post-prandial lipemia, and that secretion of the hormones in the entero-insular axis and blood glucose response did not differ between the Betapol® and control test meals. However, it is stated that "*the possibility that TAG* [triacylglycerol] *structure may influence lipoprotein metabolism and hormone secretion when consumed as a significant component of total dietary TAG on a long-term basis remains to be investigated*".

Zock et al (1995, 1996) reported on a randomized cross-over study investigating the effects of Betapol® on blood lipids and lipid metabolism in 60 healthy adults (23 males with mean age of 29 years, and 37 females with mean age of 32 years) completed (Zock *et al.*, 1995, 1996). The participants received a standardized diet where either Betapol® or a control fat (palm oil) accounted for 70% of the total daily fat intake (90 g/day) over 2 consecutive periods of 3 weeks each. Betapol® and the control fat were incorporated into the diet as specially formulated margarines and oils. The 2 diets were comparable with respect to their fatty acid composition, but the Betapol® diet contained 65% of the palmitic acid at the *sn*-2 position, whereas the control diet contained only 18% of the palmitic acid at the *sn*-2 position. Blood samples were collected following an overnight fast at baseline, on Days 17 and 21 of period 1, and Days 38 and 42 of period 2, for analysis of blood lipids. A small but statistically significant increase in total cholesterol (+0.1 mmol/L) and low density lipoprotein (LDL)-cholesterol (+0.08 mmol/L) was reported in males following consumption of the Betapol® diet when compared to the control ($p<0.05$) but the levels of triglycerides and the ratio of high density lipoprotein to LDL cholesterol were not affected. The authors concluded that changing the position of the palmitic acid on triglycerides "had little effect on lipoprotein concentrations in humans

6.5 Other Studies (e.g., Allergenicity)

OPO-Fat is not anticipated to be a risk of allergenicity or hypersensitivity beyond that of vegetable oils themselves.

6.6 GRAS Panel Evaluation

NOG has concluded that OPO-Fat is GRAS for use in non-exempt term infant formula and specified conventional food products, as described in Section 1.3, on the basis of scientific procedures. This GRAS conclusion is based on data generally available in the public domain pertaining to the safety of OPO-Fat, as discussed herein, and on consensus among a panel of experts (the GRAS Panel) who are qualified by scientific training and experience to evaluate the safety of food ingredients. The GRAS Panel consisted of the following qualified scientific experts: Joseph F. Borzelleca, Ph.D. (Virginia Commonwealth University School of Medicine); Madhusudan G. Soni, Ph.D., F.A.C.N., F.A.T.S. (Soni & Associates Inc); and Stanley M. Tarka, Jr., Ph.D., A.T.S. (Tarka Group Inc., Adjunct Associate Professor, The Pennsylvania State University College of Medicine). The GRAS Panel was selected and convened in accordance with the U.S. Food and Drug Administration (FDA) guidance for industry on *Best Practices for Convening a GRAS Panel* (U.S. FDA, 2017).

The GRAS Panel, convened by NOG, independently and critically evaluated all data and information presented herein, and also concluded that OPO-Fat is GRAS for use in conventional food products as described in Section 1.3, based on scientific procedures. A summary of data and information reviewed by the GRAS Panel, and evaluation of such data as it pertains to the proposed GRAS uses of OPO-Fat is presented in Appendix B.

6.7 Conclusion

Based on the above data and information presented herein, NOG has concluded that OPO-Fat is GRAS, on the basis of scientific procedures, for use in food and beverage products as described in Section 1. General recognition of NOG's GRAS conclusion is supported by the unanimous consensus rendered by an independent Panel of Experts, qualified by experience and scientific training, to evaluate the use of OPO-Fat in food, who similarly concluded that the proposed uses of OPO-Fat are GRAS on the basis of scientific procedures.

OPO-Fat therefore may be marketed and sold for its intended purpose in the U.S. without the promulgation of a food additive regulation under Title 21, Section 170.3 of the Code of Federal Regulations.

Part 7. §170.255 List of Supporting Data and Information

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Table of CFR Sections Referenced (Title 21—Food and Drugs)

Part	Section §	Last Amended	Section Title
101—Food labeling	101.12	4-1-20	Reference amounts customarily consumed per eating occasion
170—Food additives	170.3	4-1-19	Definitions
	170.30	4-1-19	Eligibility for classification as generally recognized as safe (GRAS)
	170.270	4-1-19	Procedures that apply when the intended conditions of use of a notified substance include use in a product or products subject to regulation by the Food Safety and Inspection Service (FSIS) of the United States Department of Agriculture

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アマノエンザイより
GRAS証明書(OPO-01

AMANO

CONFIDENTIAL

GRAS Status of Lipase Enzyme Preparation

The Regulatory committee of Amano Enzyme Inc. is of the opinion that Lipase DN, lipase enzyme preparation manufactured by Amano Enzyme Inc. (2-7, 1-chome, Nishiki, Naka-ku, Nagoya 460-8630 Japan), is Generally Recognized as safe (GRAS) when it is used as a food processing aid for the production of transesterified oil to human diet in accordance with current good manufacturing practice. The enzyme preparation is used at levels up to 40 ppm for raw oil.

Date: August 2, 2018

[redacted]

Tomonari Ogawa
Chairman, The Regulatory Committee
Amano Enzyme Inc.

GRAS Status of Lipase Enzyme Preparation

This letter provides our opinion that Lipase DN, lipase enzyme preparation manufactured by Amano Enzyme Inc. (2-7, 1-chome, Nishiki, Naka-ku, Nagoya 460-8630 Japan), is Generally Recognized as safe (GRAS) when it is used as a food processing aid for the production of transesterified oil in accordance with current good manufacturing practice. The enzyme preparation is used at levels up to 40 ppm for raw oil.

1. Lipase DN is a lipase enzyme preparation produced by *Rhizopus oryzae* under the good manufacturing practice, and it conforms to the specifications for food grade enzyme, recommended by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and Food Chemicals Codex (FCC).

2. FDA has responded to the GRAS notification submitted by Amano Enzyme Inc. In that response, FDA had no question regarding the opinion that the lipase enzyme preparation from *Rhizopus oryzae* is GRAS (GRN No.216)[1].

3. The lipase enzyme preparation targeted for notification was the former grade of current one (Lipase D). It is obtained by using the former production strain and different manufacturing process. However, the equivalence of safety between the Lipase D and Lipase DN was guaranteed through the complete verification by the expert panel of the third party.

4. Mycotoxins such as Aflatoxin (B1, B2, G1, G2, and Total), Deoxynivalenol (Vomitoxin), HT-2 and T-2 toxin, Zearalenone, Ochratoxin A and Sterigmatocystin were tested and negative in Lipase DN

5. Antibiotic activity was negative in Lipase DN.

6. From the results of a 90-day repeated dose oral toxicity study in rats using Lipase D, No Observed Adverse Effect Level (NOAEL) was 1000 mg/kg body-weight/day for males and 2000 mg/kg body-weight/day for females. The lower NOAEL for males was based on reduced urinary pH and marginal histopathological effects in the kidney at 2000 mg/kg body-weight (the highest dose tested). However, these effects were probably not toxicologically significant. The conservative NOAEL was set at 1000 mg/kg body-weight/day. In spite of such conservative value, safety margin calculated with it and the EDI, was able to secure sufficient safety.

Amano Enzyme Inc. 2-7, 1-chome, Nishiki Naka-ku, Nagoya 460-8630 Japan Tel. 052.211.3032 Fax. 052.211.3054

7. A reverse mutation test in bacteria (Ames test) and a chromosomal aberration test in cultured Chinese hamster lung (CHL/IU) cells did not show genotoxicity in Lipase D.

8. A report summarizing above toxicity tests was published in the science journal and concluded that Lipase from *Rhizopus oryzae* was safe for use as a processing aid for food (Flood and Kondo, 2003)[2].

9. Lipase DN is immobilized on an inert carrier and the raw oil is passed over the immobilized enzyme. The edible raw oil undergoes a fatty acid exchange action and becomes a modified fat. Resulted transesterified oil is used for various final foods as food ingredient. The enzyme will not leak in oil and even if a trace amount of enzyme leaks out, it will be inactivated completely by post-processing such as distillation or refining of oil.

10. Despite of above, intake of the enzyme was calculated assuming that all of enzyme leaked out. For the calculation, the basis of intake was taken as the mean of total fat value and assuming that all fat was transesterified oil derived from the Lipase DN. The statistic value of total fat intake and body weight for the calculation of Estimated Daily Intake (EDI) was extracted from several public databases[3)4)5) and 6)]. Resulted safety margin in the each class of age calculated by the EDI and NOAEL was ranged from 4919 to 35467. Even though the minimum (4919, Infant, 0-0.5 year old), the value was sufficiently high.

11. Apart from GRAS, Lipase derived from *Rhizopus oryzae* is registered in many countries as a food additive or food processing aid (Japan[7], Canada[8], Australia&New Zealand[9], France[10], China[11] and Korea[12]).

12. Since 1984, Amano Enzyme Inc. has been actively sold lipase enzyme preparation from *Rhizopus oryzae* to food industry in the world, and no safety concern has been reported.

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The Regulatory Committee
Amano Enzyme Inc.

The Regulatory Committee members

Date: August 2, 2018 [redacted]
Tomonari Ogawa
Chairman, The Regulatory Committee
Director, Quality Assurance Division

Date: July 31, 2018 [redacted]
Satoshi Koikeda, Ph. D.
Director of The Institute, Research & Development

Date: July 19, 2018 [redacted]
Yoshihisa Oyabu
General Manager,
Sales & Marketing, Food & Industrial Enzyme

Date: Jul. 19, 2018 [redacted]
Toshihisa Toyomasu
General Manager,
Sales & Marketing, Food & Industrial Enzyme

Date: July, 19, 2018 [redacted]
Masamichi Okada
General Manager,
Research & Development, Food & Industrial Enzyme Division

Date: Aug 1, 2018 [redacted]
Hidetaka Sugimoto
General Manager,
Production Engineering Department

Date: Aug 1, 2018 [redacted]
Hiroshi Shibakawa
General Manager,
Quality Assurance Department

Date: Aug. 1, 2018 [redacted]
Chiho Mizutani
General Manager,
Quality Control Department

Date: Aug 1, 2018 [redacted]
Atsushi Mizutani
Adviser
Quality Assurance Department

Table of Estimated Daily Intake (EDI) and Safety Margin per Class of Age in the US with Lipase from *Rhizopus oryzae* .

	Age (year)	Mean Intake of Total Fat[1] (g/person/day)	Enzyme Intake[2] (mg/person/day)	Body Weight[3] (kg)	EDI (mg/kg bw/day)	Safety Margin[4]
Infant[5] (Male and Female)	0–0.5	31.0	1.24	6.1	0.203	4919
	0.5–1	30.0	1.20	8.9	0.135	7417
Children (Male and Female)	1	46.4	1.86	11.3	0.164	6088
	2	50.6	2.02	13.8	0.147	6793
	3	55.5	2.22	15.9	0.140	7140
	4	60.2	2.41	18.4	0.131	7641
	5	64.8	2.59	20.8	0.125	8025
Male	6–11	74.3	2.97	34.4	0.087	11558
	12–19	102.8	4.11	69.8	0.059	16972
	20–29	103.3	4.13	84.7	0.049	20499
	30–39	102.8	4.11	90.2	0.046	21936
	40–49	91.8	3.67	91.5	0.040	24918
	50–59	87.4	3.50	90.5	0.039	25887
	60–69	78.8	3.15	90.6	0.035	28744
	70 and over	68.6	2.74	82.5	0.033	30066
Female	6–11	66.1	2.64	34.7	0.076	13130
	12–19	69.3	2.77	62.9	0.044	22696
	20–29	65.9	2.64	73.4	0.036	27845
	30–39	63.2	2.53	78.4	0.032	31013
	40–49	63.5	2.54	78.5	0.032	30906
	50–59	59.4	2.38	79.1	0.030	33291
	60–69	55.2	2.21	76.6	0.029	34692
	70 and over	49.2	1.97	69.8	0.028	35467

1) Extracted from Continuing Survey of Food Intakes by Individuals, 1994–1996, and Supplemental Children's Survey, 1998, CSF II (On an all-user basis) Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, U. S. Department of Agriculture.
https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/Csfii3yr.pdf
https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/scs_all.PDF

2) Mean Intake(g) x 1000(mg) x 40(ppm) / 1000000

3) Extracted from Anthropometric Reference Data for Children and Adults: United States, 2011–2014, Vital and Health Statistics, Series 3, No. 39, 2016. National Center for Health Statistics, Centers for Disease Control and Prevention, U. S. Department of Health and Human Services
https://www.cdc.gov/nchs/data/series/sr_03/sr03_039.pdf

4) NOAEL (1000mg/kg bw/day) / EDI

5) Data was Adequate Intake Value, extracted from Dietary Reference Intakes (DRIs): Recommended Dietary Allowances and Adequate Intakes, Total Water and Macronutrients, Food and Nutrition Board, Institute of Medicine, National Academies, National Institues of Health
https://www.ncbi.nlm.nih.gov/books/NBK56068/table/summarytables.t4/?report=objectonly

GRAS Panel Statement Concerning the Generally Recognized as Safe (GRAS) Status of High 2-Palmitic Vegetable Oil (OPO-Fat) for Use in Infant Formula and Conventional Foods

19 March 2019

INTRODUCTION

The Nisshin OilliO Group Ltd. (NOG) intends to market a high 2-palmitic vegetable oil[1] named OPO-Fat as an ingredient in infant formula and conventional foods in the United States (U.S.). OPO-Fat is produced through the enzyme-catalyzed interesterification of vegetable oils, specifically palm stearin and a source of oleic acid (*e.g.,* high oleic sunflower oil, palm kernel oil). The reaction rearranges the positional distribution of the fatty acids within the triglycerides, resulting in an increased proportion of palmitic acid at the *sn*-2 position. Similar high 2-palmitic vegetable oil products have Generally Recognized as Safe (GRAS) status in the U.S.; Betapol® produced by Loders Croklaan B.V. is GRAS for use in infant formula for term and preterm infants at levels up to 80% of the total fat content (GRN 131) (U.S. FDA, 2003). The intended uses of NOG's OPO-Fat will be the same as those for InFat® produced by Enzymotec Ltd. InFat® is GRAS for use in infant formulas for term and pre-term infants at levels of up to 70% of the total fat, and it is also GRAS for use as a replacement for all added fat in baby and toddler foods (including meat and poultry products), and in generally processed food products (excluding meat and poultry products) (GRN 192) (U.S. FDA, 2006).

A panel of independent scientists (the "GRAS Panel"), qualified by their scientific training and relevant experience in the safety evaluation of food ingredients, was convened to conduct a critical and comprehensive assessment of data and information pertinent to the safety of OPO-Fat. The GRAS Panel was asked to determine whether the intended uses of OPO-Fat as an ingredient in infant formula and conventional foods is GRAS based on scientific procedures. For the purposes of the GRAS Panel's evaluation, "safe" or "safety" indicates that there is a reasonable certainty in the minds of competent scientists that the substance is not harmful under the conditions of intended use in foods, as stated in 21 CFR §170.3(i) (U.S. FDA, 2018). The GRAS Panel consisted of the below-signed qualified scientific experts: Joseph F. Borzelleca, Ph.D. (Virginia Commonwealth University School of Medicine); Madhusudan G. Soni, Ph.D., F.A.C.N., F.A.T.S. (Soni & Associates Inc); and Stanley M. Tarka, Jr., Ph.D., A.T.S. (Tarka Group Inc., Adjunct Associate Professor, The Pennsylvania State University College of Medicine). The GRAS Panel was selected and convened in accordance with the U.S. Food and Drug Administration (FDA)'s guidance for industry on *Best Practices for Convening a GRAS Panel* (U.S. FDA, 2017). NOG ensured that all reasonable efforts were made to identify and select a balanced GRAS Panel with expertise in food safety, toxicology, and nutrition. Efforts were placed on identifying conflicts of interest or relevant "appearance issues" that could potentially bias the outcome of the deliberations of the GRAS Panel; no such conflicts of interest or "appearance issues" were identified. The GRAS Panel received a reasonable honorarium as compensation for their time; the honoraria provided to the GRAS Panel were not contingent upon the outcome of their deliberations.

[1] This is the term used to refer to other similar products in the U.S. FDA GRAS Notice Inventory. Synonyms include *beta*-palmitin, *beta*-palmitate, *beta*-palmitic acid, and *sn*-2 palmitate. These terms are used interchangeably throughout this document.

The GRAS Panel, independently and collectively, critically examined a comprehensive package of publicly available scientific information relevant to the safety of OPO-Fat. This included details of its method of manufacture, identity/composition, product specifications and supporting analytical data, intended use and use-levels in specified food products, consumption estimates, and a summary of the generally available information on the safety of high 2-palmitic vegetable oils obtained from a comprehensive search of the literature using several online databases. Following its independent, critical evaluation of such data and information, the GRAS Panel unanimously concluded that under the conditions of intended use described herein, NOG's OPO-Fat, meeting appropriate food-grade specifications and manufactured consistent with current Good Manufacturing Practice (cGMP), is GRAS based on scientific procedures. A summary of the basis for the GRAS Panel's conclusion is provided below.

IDENTITY, METHOD OF MANUFACTURE, SPECIFICATIONS, BATCH ANALYSIS, AND STABILITY

OPO-Fat is a mixture of vegetable oils, namely palm stearin and a source of oleic acid (*e.g.,* high oleic sunflower oil, palm kernel oil), in which the positioning of the fatty acids on the triglyceride backbone has been rearranged through enzymatic interesterification. This reaction increases the proportion of the palmitic acid occurring at the *sn*-2 position. Approximately 55% of the palmitic acid (C16:0) in OPO-Fat is at the *sn*-2 position, and the predominant triglyceride species present is 1,3-dioleoyl-2-palmitoylglycerol (OPO).

NOG produces OPO-Fat in accordance with cGMP and a Hazards Analysis and Critical Control Points (HACCP) system is in place. The production facilities are also certified to be compliant with ISO 9001 and FSSC 22000. All raw material and processing aids meet food-grade specifications. NOG's OPO-Fat is manufactured using the same basic principles as those used to produce other high 2-palmitic vegetable oils such as Betapol® and InFat®, as described in GRN 131 and GRN 192, respectively (U.S. FDA, 2003, 2006). Palm stearin and a source of oleic acid are subjected to an interesterification reaction catalyzed by a suitable lipase enzyme to rearrange the positional distribution of the fatty acids on the triglyceride backbone. The free fatty acids are then removed by distillation, and the mixture undergoes refining steps (*e.g.*, bleaching and deodorization) that are commonly employed during the processing of edible oils. The lipase preparation employed has been concluded GRAS by the enzyme supplier for its intended use during the production of interesterified oils. The lipase enzyme is immobilized onto an inert carrier, which facilitates its removal during the production of the OPO-Fat. The GRAS Panel also noted that any residual amounts of enzymes remaining will likely be denatured and inactivated during the refining steps of the OPO-Fat.

Analysis of 5 nonconsecutive lots of OPO-Fat demonstrates that the manufacturing process produces a consistent product that meets the defined specifications, which include parameters on its identity/composition, and acceptable limits for heavy metal and microbiological contaminants. OPO-Fat is specified to contain >50% of its palmitic acid at the *sn*-2 position, and this value is expected to be typically in the ranges of 55 to 56%, as supported by data from batch analyses. OPO-Fat is composed largely of triglycerides (≥94%), with only small amounts of diglycerides (≤6%) and monoglycerides (≤1%) present.

Given that OPO-Fat is simply a vegetable oil in which the positional distribution of the fatty acids on the triglyceride backbone have been rearranged, it is expected to have similar stability profiles as other edible vegetable oils during bulk storage and when it is incorporated into food products. Ongoing stability testing being conducted by NOG suggests that OPO-Fat will be stable for at least 6 months when it is stored at 20°C in its original packaging.

INTENDED USE AND ESTIMATED EXPOSURE

OPO-Fat is intended for use in infant formulas for term and pre-term infants at levels of up to 70% of the total fat. Additionally, OPO-Fat is intended as a replacement for all added fat in baby and toddler foods (including meat and poultry products), and in generally processed food products (excluding meat and poultry products). These intended conditions of use are identical to those that have been concluded GRAS for InFat® under GRN 192 (U.S. FDA, 2006). Betapol® has also been concluded GRAS for use in formulas for term and pre-term infants at up to 80% of the total fat content (GRN 131) (U.S. FDA, 2003). OPO-Fat is intended to serve as a substitute for these other high 2-palmitic vegetable oils (InFat®, Betapol®).

NOG's OPO-Fat cannot serve as the sole source of fats in infant formula, and like other high 2-palmitic vegetable oils, it will need to be added together with other vegetable oils in order to provide a balanced supply of fatty acids, including the essential fatty acids such as linoleic acid and α-linolenic acid. The intake of OPO-Fat from its intended uses in infant formula is anticipated to be in similar ranges as those estimated for InFat® and Betapol®. As reported in GRN 192 (U.S. FDA, 2006), among infants (age 0 to 5 months), the mean and 90th percentile intake of InFat® was estimated as 22.4 g/person/day (3.4 g/kg body weight/day) and 36 g/person/day (5.9 g/kg body weight/day), respectively. Similar levels of intakes were also derived for the intended uses of Betapol® in infant formula. It was estimated that the intake of Betapol® would not exceed 28 g/day, based on the typical composition of infant formula (*i.e.*, fat content of 3.5 to 4.5 g per 100 mL), and the assumption that approximately 750 mL of formula is consumed daily during the first 6 months of life (GRN 131) (U.S. FDA, 2003). On a body weight basis, the intake of Betapol® was estimated at 5.5 g/kg body weight/day for both preterm and term infants (GRN 131) (U.S. FDA, 2003).

With regards to the intended uses of OPO-Fat in baby/toddler foods and processed foods for the general population, the intake estimates that were previously derived for InFat® using consumption data collected from nationally representative dietary intake surveys are applicable. As reported in GRN 192 (U.S. FDA, 2006), the mean and 90th percentile all-users intake of InFat® in the total population were estimated at 35.3 g/person/day (0.7 g/kg body weight/day) and 65.7 g/person/day (1.5 g/kg body weight/day), respectively.

DATA PERTAINING TO ASSESSMENT OF SAFETY

Following ingestion, OPO-Fat is expected to undergo the same post-prandial fate as other dietary fats. Fatty acids on the outer carbon atoms of triglycerides (*i.e.*, *sn*-1 and *sn*-3 positions) are preferentially hydrolyzed by pancreatic lipases, resulting in the formation of free fatty acids and 2-monoglycerides (Karupaiah and Sundram, 2007; Barrett *et al*., 2010; Lindquist and Hernell, 2010; Hall, 2011; Innis, 2011; Bourlieu *et al.*, 2014). Following their release, unesterified long-chain saturated fatty acids (*e.g.*, palmitic acid) within the intestines may combine with divalent cations such as calcium to form insoluble soaps (Mu and Porsgaard, 2005; Innis, 2011). These insoluble soaps cannot be absorbed and consequently are excreted in the feces, resulting in a loss of fat and mineral absorption (Mu and Porsgaard, 2005; Innis, 2011). Therefore, high 2-palmitic vegetable oils with an increased proportion of the palmitic acid located in the *sn*-2 position of triglycerides, in contrast to conventional vegetable oils that contain most of their saturated fatty acids (including palmitic acid) in the outer *sn*-1 and *sn*-3 positions, were developed for use in infant formula to better mimic the triglyceride structures in human breast milk and accordingly, increase their absorption efficiency in infants (Karupaiah and Sundram, 2007; Innis, 2011; Delplanque *et al.*, 2015; Zou *et al.*, 2016).

The GRAS Panel noted that although product-specific preclinical or clinical studies have not been conducted with OPO-Fat, its safety can be supported based on data that have been obtained with other high 2-palmitic vegetable oils (Betapol®, InFat®), given their comparable production process and composition. The safety of Betapol® and InFat® for their intended uses has been comprehensively reviewed in the GRAS notices submitted for these ingredients (GRN 131, 192) (U.S. FDA, 2003, 2006), which were issued "no questions" responses by the U.S. FDA. The GRAS Panel also considered additional studies that were published since the submission of these GRAS notices.

Toxicological Studies

A number of studies were conducted to evaluate the effects of *sn*-2 palmitate on fat absorption and metabolism in animals including rats (Lien *et al.*, 1993, 1997; de Fouw *et al.*, 1994; Aoe *et al.*, 1997; Sanders *et al.,* 2001) and newborn piglets (Innis *et al.*, 1993a,b, 1995, 1996; Rioux *et al*., 1997). These studies have been described in GRN 131 and GRN 192 (U.S. FDA, 2003, 2006). The GRAS Panel noted that although these studies were designed to evaluate nutritional effects and not toxicity specifically, no adverse effects on growth or development were reported.

The GRAS Panel reviewed the results of a 2-generation rat feeding study, where 4-week old (±1 day) Specific Pathogen Free rats (Crl:CD[SD] BR VAF/Plus strain) were fed diets containing 0, 1.5%, 7.5%, or 15.0% Betapol® (Spurgeon *et al.*, 2003). The diets were standardized to a fat content of 15% using palm olein. The study included a comparative control group where rats were fed diets containing 15% of palm olein. Another control group was fed a standard laboratory animal diet (LAD) with a fat content ranging between 2.3 to 4.7%. The diets were administered to the parental generation (F_0) from 6 weeks of age (n=32/sex/group) until weaning of the F_1 generation. Animals in the F_1 generation (n=28/sex/group) were administered the diets from 4 weeks of age until weaning of the F_2 generation. The dietary administration of Betapol® was well tolerated by the animals. The authors reported no biologically relevant differences in fertility or reproductive parameters in animals receiving Betapol® compared to the control groups. None of the mortalities reported were related to Betapol®, since they occurred at a similar frequency in the comparative control group and LAD group. Some effects (e.g. pale fecal pellets, and lower food and water consumption) were consistently reported amongst the animals receiving Betapol® and the comparative control group versus animals in the standard LAD group, suggesting that they are attributed to the higher fat content of the test diets. The values for hematology or serum biochemistry parameters in animals receiving Betapol® were also consistent with those reported in the comparative control group, and/or with those in the standard LAD group. Statistically significant higher triglyceride levels in F_1 males (after weaning) administered all dose groups of Betapol® when compared against both control groups were reported. These effects were not reported in the F_1 males before weaning, in the F_0 males, or in the females, and total lipids were not elevated. Upon necropsy, The only consistent reported finding at necropsy across the adults of both the F_0 and F_1 generations was a small but dose-related increase in the absolute weight of the ovaries, which reached statistical significance in animals receiving diets containing 15% Betapol® when compared against the comparative control group. The authors concluded this was not toxicologically relevant since there were no microscopic changes in the ovaries, and no changes in fertility and reproductive performance or sexual maturation. The study authors concluded "*there were no evidence of the presence of an unexpected toxicant*" (Spurgeon *et al.*, 2003), and in the GRAS notice submitted for Betapol®, the no-observed-adverse effect level (NOAEL) was concluded to be 15% Betapol® in the diet, which was considered equivalent to approximately 10 g Betapol®/kg body weight/day by the notifier (GRN 131) (U.S. FDA, 2003).

More recent publications were identified in which high 2-palmitic vegetable oils were orally administered in animal models (*e.g*., Lu *et al.*, 2013; Wan *et al.*, 2016; Bar-Maisels *et al*., 2017). These studies were

conducted to largely evaluate mechanistic endpoints related to the potential health benefits of *sn*-2 palmitate (*e.g.*, bone health, enterocolitis, and intestinal microbiota), and are of limited relevance to the safety assessment of OPO-Fat., The GRAS Panel noted that these studies did not report any overt evidence of toxicity or adverse effects.

Clinical Studies

Published studies evaluating the safety and tolerance of high 2-palmitic vegetable oils (*e.g.*, Betapol®, InFat®) in infant formula were considered applicable to the GRAS evaluation of OPO-Fat (Carnielli *et al.,* 1995a,b, 1996; Lucas *et al.,* 1997; Kennedy *et al.,* 1999; Nelson and Innis, 1999; Innis and Nelson, 2013; Litmanovitz *et al.,* 2013, 2014; Yaron *et al.,* 2013; Nowacki *et al.,* 2014; Yao *et al.,* 2014; Bar-Yoseph *et al.,* 2016, 2017; Béghin *et al.,* 2018). Findings from these studies have consistently demonstrated that infant formula containing high-2 palmitic vegetable oils are well tolerated and produce non-inferior growth relative to infants consuming standard infant formula preparations. No adverse effects attributed to these high 2-palmitic vegetable oils have been reported in the literature. These studies also suggest that increasing the proportion of palmitic acid at the *sn*-2 position may reduce the formation of fatty acid soaps and fecal loss of palmitic acid and calcium. Studies evaluating the effects of infant formula containing high 2-palmitic vegetable oil in conjunction with dietary fiber ingredients (*e.g*., galacto-oligosaccharides, long-chain fructo-oligosaccharides, oligofructose) were identified during the literature search (Savino *et al.*, 2003, 2005, 2006; Schmelzle *et al.*, 2003; Bongers *et al.*, 2007; Hays *et al.*, 2016; Zhong *et al.*, 2016; Civardi *et al.*, 2017; Mao *et al.*, 2018). In these studies, formula containing high 2-palmitic vegetable oils were generally well-tolerated and safe.

The safety of triglycerides with palmitic acid predominately in the *sn*-2 position for use in infant formula was evaluated recently by the European Food Safety Authority (EFSA) Panel on Dietetic Products, Nutrition and Allergies (NDA Panel). In their *Scientific Opinion on the essential composition of infant and follow-on formulae*, the EFSA NDA Panel concluded: "*There are no adverse effects reported of the use of TAG* [triacylglycerol] *with palmitic acid predominantly esterified in the sn-2 position in IF* [infant formula] *and/or FOF* [follow-on formula] *instead of other TAGs*" (EFSA, 2014).

Two randomized, controlled, cross-over clinical trials were conducted in which Betapol® was administered to adults, either as a single 40 g dose consumed as part of a liquid meal replacement (Zampelas *et al.,* 1994), or as part of a standardized diet where Betapol® accounted for 70% of the total daily fat intake for 3 weeks (Zock *et al.*, 1995, 1996). These studies were conducted to investigate the metabolic effects following the ingestion of Betapol®. Betapol® did not affect post-prandial lipemia or blood glucose response and had little effect on lipoprotein concentrations compared to a control fat blend (Zampelas *et al.,* 1994; Zock *et al.*, 1995, 1996).

Use of Interesterified Fats in the Food Supply

In light of the increasing evidence that industrially produced *trans* fatty acids, which are present primarily in partially hydrogenated oils (PHOs), are associated with adverse effects on cardiovascular health, their use in the food supply has been phased out. For instance, the U.S. FDA published a final rule in which it was concluded that there is no longer consensus among qualified experts that PHOs are GRAS for any use in human foods (U.S. FDA, 2015). Interesterified fats are increasingly being used as an alternative to PHOs in food products. Unlike hydrogenation, interesterification involves the exchange of fatty acids within and between triglycerides in a mixture, without altering the structure of the fatty acids themselves (*i.e.*, no generation of *trans* fats) (Klonoff, 2007; Vieira *et al*., 2015; Mensink *et al.*, 2016). Interesterification has already been used by the food industry for decades to modify the properties of fats (*e.g.*, melting point and crystallization), and accordingly, their functionalities in foods (Mensink *et al.*, 2016; Kaushik and Grewal, 2017; List and Marangoni, 2018;). Similar to InFat®, NOG's OPO-Fat can be used to replace other semi-solid types of fats in foods, such as margarine. Its good oxidative stability and higher solid fat index may also provide utility in baked goods.

Given their increasing use by the food industry, the potential impact of interesterified fats on human nutrition and health have been the subject of considerable scientific evaluation (Berry, 2009; Hayes and Pronczuk, 2010; Mensink *et al.*, 2016; Mills *et al.*, 2017; Alfieri *et al.*, 2018; Sloop *et al.*, 2018). In 2012, the North American Branch of the International Life Sciences Institutes' Technical Committee on Dietary Lipids sponsored a workshop, which included representatives from the industry, government, professional associations, and academia, to review the effects of interesterified fats on health and to outline future research needs. The outcomes of this workshop were subsequently published by Mensink *et al.* (2016), in which it was concluded that:

> "*The consensus among workshop participants was that interesterified fat production is a feasible and economically viable solution for replacing dietary TFAs* [trans fatty acids]. […] *Although the above-described studies conducted on interesterified fats have not revealed any health issues, gaps in knowledge exist regarding the metabolic fate and potential health effects of longer-term consumption of interesterified fats. Outstanding questions must be answered regarding the effects of interesterification on modifying certain aspects of lipid and glucose metabolism, inflammatory responses, hemostatic parameters, and satiety"*.

One of the limitations identified for the intervention studies reviewed was that interesterified fats were generally tested at intake levels that are likely to exceed the intakes that would occur in practice; specifically, Mensink *et al.* (2016) noted that the intake of interesterified fats tested appeared to be at least twice the amount of the upper levels of intake estimated for interesterified fats based on intake modeling. It has been recognized by other authors that these intervention studies were more often conducted with interesterified fats rich in stearic acid (C18:0), which may not necessarily be representative of the effects of interesterified fats that are rich in palmitic acid (Hayes and Pronczuk, 2010; Mills *et al.*, 2017; Alfieri *et al.*, 2018).

The use of interesterified fats in the food supply, including its applications as a replacement for PHOs in processed foods, have not been comprehensively reviewed by authoritative bodies, and it has not been restricted or banned by any regulatory agency. In Health Canada's Notice of Modification prohibiting the use of PHOs in foods (Health Canada, 2017), it is stated that:

> "*Health Canada strongly recommends that PHOs be replaced as much as possible by low saturated fat alternatives such as high oleic/monounsaturated oils instead of fat blends or interesterified fats high in saturated fats. […] Health Canada is aware that, for certain foods, it is challenging to replace PHOs with oils rich in unsaturated fats as they may not impart the desired functional properties. As communicated in the April 2017 NOP, the replacement of PHOs with unhealthy alternatives, such as oils high in saturated fats, is not as desirable as substituting PHOs with unsaturated oils. Nonetheless, the overall effects of saturated fats on cardiovascular health are less detrimental than the effects of trans fats (Brouwer, 2016; Wang et al., 2016; de Souza et al., 2015; Mozaffarian and Clarke, 2009). Therefore, replacement of PHOs with oils high in polyunsaturated fats, monounsaturated fats and, although not ideal, saturated fats, is expected to have a public health benefit".*

The GRAS Panel considered that while OPO-Fat is a semi-solid fat that can be used in some of the same applications as PHOs (*e.g.*, margarine, baked goods), the interesterification process does not create *trans* fats, and interesterified fats are a suitable replacement for PHOs. OPO-Fat is an interesterified blend of palm stearin with a source of oleic acid such as high oleic sunflower oil or palm kernel oil, and accordingly, as much as 50% of the fatty acids are saturated fatty acids (24 to 42% palmitic acid, and 1 to 6% stearic acid). Although it is recognized that interesterified fats that are high in saturated fats are not an ideal replacement for PHOs from a health perspective, they are able to provide technological properties that cannot be fulfilled otherwise by native oils rich in unsaturated fats. Any concerns over the health impact of saturated fats being used to replace PHOs in the food supply would broadly apply across all fat blends and interesterified fats rich in saturated fats that are currently being used in processed foods.

In summary, high 2-palmitic vegetable oils were developed for use in infant formula, to better mimic the triglyceride structures that are naturally present in human breast milk. The uses of high 2-palmitic vegetable oils as a replacement for conventional vegetable oils in infant formula have been demonstrated to be safe and well-tolerated in infants. High 2-palmitic vegetable oils may also have useful functionalities as a source of added fats in other processed foods. Given that OPO-Fat is manufactured in a similar manner and accordingly has comparable compositions as other high 2-palmitic vegetable oils on the market, including those with GRAS status in the U.S. (Betapol®, GRN 131; InFat®, GRN 192), OPO-Fat is also considered safe and acceptable for use in the food supply. Specifically, OPO-Fat is considered safe for use as a replacement for added fats in infant formula and in other processed food products, when it is intended for use in the same manner as those that had been concluded GRAS for Betapol® (GRN 131) (U.S. FDA, 2003) and InFat® (GRN 192) (U.S. FDA, 2006).

CONCLUSION

We, the members of the GRAS Panel, have independently and collectively critically evaluated the data and information pertinent to the safety of the intended conditions of use for high 2-palmitic vegetable oil produced by Nisshin OilliO Group Ltd. (OPO-Fat). We unanimously conclude that OPO-Fat, when produced consistent with current Good Manufacturing Practices (cGMP) and meeting appropriate food-grade specifications, is Generally Recognized as Safe (GRAS) for its intended uses in infant formula at levels comprising up to 70% of the total fat content, and as a replacement for all added fat in baby and toddler foods (including meat and poultry products) and in generally processed food products (excluding meat and poultry products), based on scientific procedures.

It is our opinion that other qualified experts would concur with these conclusions.

[redacted]

Professor Emeritus Joseph F. Borzelleca, Ph.D.
Virginia Commonwealth University School of Medicine

03 September 2019
Date

[redacted]

Madhusudan G. Soni, Ph.D., F.A.C.N., F.A.T.S.
President, Soni & Associates Inc.

06 September 2019
Date

[redacted]

Stanley M. Tarka, Jr., Ph.D., A.T.S.
President, Tarka Group Inc.
Adjunct Associate Professor, The Pennsylvania State University College of Medicine

30 August 2019
Date

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Number	Substance	Notifier	Date of Filing	Date of Closure	Additional Correspondence
GRN 131	High 2-palmitic vegetable oil	Loders Croklaan B. V.	Jun. 9, 2003	Dec. 4, 2003	May 7, 2004
GRN 192	High 2-palmitic vegetable oil	Enzymotec Ltd.	Feb. 6, 2006	Aug. 3, 2006	Dec. 14, 2012

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APPENDIX C
Safety and Suitability for Use in USDA Regulated Products

Safety and Suitability for Use in USDA Regulated Products

As the proposed conditions of use NOG's OPO-Fat include categories regulated by the United States Department of Agriculture (USDA), the safety and suitability on of the NOG's OPO-Fat in these applications was considered.

The intended use of NOG's OPO-Fat in meat products is not expected to adversely affect the wholesomeness of the product. The organoleptic properties (*e.g.*, color, odor, taste) of NOG's OPO-Fat are comparable to the other high 2-palmitic vegetable oils. The safety of OPO-Fat is addressed in Part 6 (§ 170.250 Narrative and Safety Information) of this Notice.

OPO-Fat is intended to serve as an alternative edible oil in the production of various meat and poultry products. It is not intended for use as a processing aid as defined under 21 CFR § 101.100(a)(3)(ii). As such, the presence of NOG's OPO-Fat will be listed by its common or usual name (high 2 palmitic vegetable oil) in the ingredients statement of any resultant product.

ESTIMATED DAILY INTAKE OF OPO-FAT BY THE U.S. POPULATION FROM PROPOSED FOOD USES (2017-2018 NHANES)

CONFIDENTIAL

Draft for Discussion

The Nisshin Oillio Group, Ltd.
1-23-1 Shinkawa, Chuo-Ku
Tokyo 104-8285, Japan

DATE:
30 June 2021

Estimated Daily Intake of OPO-Fat by the U.S. Population from Proposed Food Uses (2017-2018 NHANES)

TABLE OF CONTENTS

1.0 INTRODUCTION 3

2.0 FOOD CONSUMPTION SURVEY DATA 3
2.1 Survey Description 3
2.2 Nutrient Values (Foods and Supplements) 4
2.3 Statistical Methods 4

3.0 FOOD USAGE DATA 5

4.0 FOOD SURVEY RESULTS 7
4.1 Estimated Daily Intake of OPO-Fat from All Proposed Food Uses in the U.S. 7
4.2 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses in the U.S. 9

5.0 SUMMARY AND CONCLUSIONS 9

6.0 REFERENCES 10

APPENDIX A ESTIMATED DAILY INTAKE OF OPO-FAT FROM INDIVIDUAL PROPOSED FOOD USES BY DIFFERENT POPULATION GROUPS WITHIN THE U.S. (2017-2018 NHANES DATA) 11

APPENDIX B ESTIMATED DAILY PER KILOGRAM BODY WEIGHT INTAKE OF OPO-FAT FROM INDIVIDUAL PROPOSED FOOD USES BY DIFFERENT POPULATION GROUPS WITHIN THE U.S. (2017-2018 NHANES DATA) 30

APPENDIX C REPRESENTATIVE FOOD CODES FOR PROPOSED FOOD USES OF OPO-FAT IN THE U.S. (2017-2018 NHANES DATA) 49

List of Tables

Table 4.1-1 Summary of the Estimated Daily Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data) 8
Table 4.1-2 Summary of the Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data) 8
Table A-1 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged <6 Months within the U.S. (2017-2018 NHANES Data) 12
Table A-2 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged 6 to <12 Months within the U.S. (2017-2018 NHANES Data) 14
Table A-3 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Young Children Aged 1 to 3 Years within the U.S. (2017-2018 NHANES Data) 16
Table A-4 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Children Aged 4 to 11 Years within the U.S. (2017-2018 NHANES Data) 18

Table A-5 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Female Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data) 20
Table A-6 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Male Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data) 22
Table A-7 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Female Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data) 24
Table A-8 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Male Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data) 26
Table A-9 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by the U.S. Population Aged 1 Year and Older (2017-2018 NHANES Data) 28
Table B-1 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged <6 Months within the U.S. (2017-2018 NHANES Data) 31
Table B-2 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged 6 to <12 Months within the U.S. (2017-2018 NHANES Data) 33
Table B-3 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Young Children Aged 1 to 3 Years within the U.S. (2017-2018 NHANES Data) 35
Table B-4 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Children Aged 4 to 11 Years within the U.S. (2017-2018 NHANES Data) 37
Table B-5 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Female Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data) 39
Table B-6 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Male Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data) 41
Table B-7 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Female Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data) 43
Table B-8 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Male Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data) 45
Table B-9 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by the U.S. Population Aged 1 Year and Older (2017-2018 NHANES Data) 47

Estimated Daily Intake of OPO-Fat by the U.S. Population from Proposed Food Uses (2017-2018 NHANES)

1.0 INTRODUCTION

OPO-fat is proposed for use in the United States (U.S.) as an ingredient for the replacement of 70% total fat in infant formula and 100% total fat in all other processed foods, excluding meat, poultry, and egg products falling under jurisdiction of the United States Department of Agriculture (USDA).

Estimates for the intake of OPO-fat were based on the proposed food uses and use levels for OPO-fat in conjunction with food consumption data included in the U.S. National Center for Health Statistics' National Health and Nutrition Examination Surveys (NHANES) 2017-2018. Calculations for the mean and 90th percentile *per capita* and consumer-only intakes were performed for all proposed food uses of OPO-fat and the percentage of consumers were determined. Similar calculations were used to estimate the intake of OPO-fat resulting from each individual proposed food use, including the calculations of percent consumers. In both cases, the per person and per kilogram body weight intakes were reported for the following population groups:

- Infants, ages <6 months;
- Infants, ages 6 to <12 months;
- Young children, ages 1 to 3 years;
- Children, ages 4 to 11 years;
- Female teenagers, ages 12 to 19 years;
- Male teenagers, ages 12 to 19 years;
- Female adults, ages 20 years and older;
- Male adults, ages 20 years and older; and
- Total non-infant population (ages 1 years and older, and both gender groups combined).

2.0 FOOD CONSUMPTION SURVEY DATA

2.1 Survey Description

NHANES for the years 2017-2018 are available for public use (CDC, 2021a,b; USDA, 2021). NHANES are conducted as continuous, annual surveys, and they are released in 2-year cycles. During each year of the ongoing NHANES program, individuals from the U.S. are sampled from up to 30 different study locations in a complex multi-stage probability design intended to ensure the data are a nationally representative sample of the U.S. population.

NHANES 2017-2018 dietary survey data were collected from individuals and households *via* 24-hour dietary recalls administered on 2 non-consecutive days (Day 1 and Day 2) throughout all 4 seasons of the year. Day 1 data were collected in-person, and Day 2 data were collected by telephone in the following 3 to 10 days, on different days of the week, to achieve the desired degree of statistical independence. The data were collected by first selecting primary sampling units (PSUs), which were counties throughout the U.S., of which 30 PSUs are visited per year. Smaller contiguous counties were combined to attain a minimum population size. These PSUs were segmented, and households were chosen within each segment. One or more participants within a household were interviewed. For NHANES 2017-2018, 16,211 individuals were selected for the sample, 9,254 were interviewed (51.9%), and 8,704 were examined (48.8%).

In addition to collecting information on the types and quantities of foods being consumed, NHANES 2017-2018 collected socio-economic, physiological, and demographic information from individual participants in the survey, such as sex, age, body weight, and other variables (such as height and race-ethnicity) that may be useful in characterizing consumption. The inclusion of this information allows for further assessment of food intake based on consumption by specific population groups of interest within the total population. The primary sample design for NHANES 2017-2018 includes an oversample of non-Hispanic Asian persons, Hispanic persons, non-Hispanic black persons, non-Hispanic white and "other" older persons (≥80 years), and non-Hispanic low income white and "others" persons (≤185% of the Department of Health and Human Services poverty guidelines); however, sample weights were incorporated to allow estimates from these subgroups to be combined to obtain national estimates that reflect the relative proportions of these groups in the population as a whole (CDC, 2021a,b; USDA, 2021).

2.2 Nutrient Values (Foods and Supplements)

The USDA's Food and Nutrient Database for Dietary Studies (FNDDS) provides nutrient values for foods and beverages reported in the dietary intake component of NHANES (USDA ARS, 2021). In the FNDDS 2017-2018, values are available for 64 nutrient/food components, including total fat, expressed on a gram basis (USDA ARS, 2020). Nutrient values for total fat associated with food codes from the 2017-2018 NHANES were obtained from the FNDDS 2017-2018 and utilized to determine the amount of fat that would be replaced with OPO-fat under the proposed conditions of use (USDA ARS, 2021).

2.3 Statistical Methods

For the intake assessment, consumption data from individual dietary records, detailing food items ingested by each survey participant, were collated by computer and used to generate estimates for the intake of OPO-fat by the U.S. population[1]. Estimates for the daily intake of OPO-fat represent projected 2-day averages for each individual from Day 1 and Day 2 of NHANES 2017-2018 (*i.e.*, a value was established for each person). From these average amounts, a distribution was established from which the mean and percentile intake estimates for the cohort of interest were determined, which incorporated survey weights in order to provide representative intakes for the entire U.S. population. "*Per capita*" intake refers to the estimated intake of OPO-fat averaged over all individuals surveyed, regardless of whether they consumed food products in which OPO-fat is proposed for use, and therefore includes individuals with "zero" intakes (*i.e.*, including individuals who reported no intake of food products containing OPO-fat during the 2 survey

[1] Statistical analysis and data management were conducted in DaDiet Software (Dazult Ltd., 2018). DaDiet Software is a web-based software tool that allows accurate estimate of exposure to nutrients and to substances added to foods, including contaminants, food additives and novel ingredients. The main input components are concentration (use level) data and food consumption data. Data sets are combined in the software to provide accurate and efficient exposure assessments.

days). "Consumer-only" intake refers to the estimated intake of OPO-fat by only those individuals who reported consuming food products of interest on either Day 1 or Day 2 of the survey.

Mean and 90th percentile intake estimates based on sample sizes of less than 30 and 80, respectively, may not be considered statistically reliable due to the limited sampling size (CDC, 2013). As such, the reliability of estimates for the intake of OPO-fat based on consumption estimates derived from individual population groups of a limited sample size should be interpreted with caution. These values are marked with an asterisk in the relevant data tables.

3.0 FOOD USAGE DATA

As indicated in the introduction, OPO-fat is intended to replace 70% of total fat in infant formula and 100% of total fat in all other processed foods, excluding meat, poultry, and egg products falling under USDA jurisdiction.

The proposed food uses of OPO-fat employed in the current intake analysis are summarized in Table 3-1. Food codes representative of each proposed food use were chosen from the NHANES 2017-2018 (CDC, 2021b). Food codes were grouped in food use categories according to Title 21, Section §170.3 of the *Code of Federal Regulations* (U.S. FDA, 2020a).

In the assessment, OPO-fat was assumed to replace 70% of total fat nutrient values for infant formula food codes, and 100% of total fat nutrient values for all other proposed food uses. The range of use levels of OPO-fat applied in the assessment for each individual food use are summarized in Table 3-1.

If necessary, product-specific adjustment factors were developed for NHANES food codes representative of composite foods/mixtures based on recipe data provided in the FNDDS (USDA ARS, 2021). As total fat nutrient values are available for the whole composite food/mixture only and not for individual components, it was assumed that the proportion of total fat replaced by OPO-fat was equivalent to the recipe fraction for processed foods used as ingredients in composite foods/mixtures. This assumption is noted as a source of uncertainty associated with potential under- or over-estimation depending on the composite food/mixture.

All food codes, total fat nutrient values, recipe fractions (where applicable), and use levels of OPO-fat applied in the current intake assessment are listed in Appendix C.

Table 3-1 Summary of the Individual Proposed Food Uses and Use Levels for OPO-Fat in the U.S.

Food Category (21 CFR §170.3) (U.S. FDA, 2020a)[a]	Food Uses[b]	OPO-Fat Use Levels (g/100 g)[c]
Baked Goods and Baking Mixes	Cakes	0.3 to 29.1
	Cookies	0.34 to 35.3
	Grain-Based Crackers	1.21 to 31.72
	French Toast, Pancakes, and Waffles	0.38 to 28.71
	Pastries	2.79 to 41.23
	Pies	4.75 to 39.25
	Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	0.34 to 29.07
	Yeast Breads and Rolls	0.82 to 24.75

Table 3-1 Summary of the Individual Proposed Food Uses and Use Levels for OPO-Fat in the U.S.

Food Category (21 CFR §170.3) (U.S. FDA, 2020a)[a]	Food Uses[b]	OPO-Fat Use Levels (g/100 g)[c]
Breakfast Cereals	Ready-to-Eat Cereals	0.35 to 14.1
	Cereal and Nutrition Bars	0.9 to 32.2
Cheeses	Cheese-Based Spreads and Dips	8.88 to 21.23
Dairy Product Analogs	Fluid Milk, Imitation	0.04 to 2.64
	Cream Substitute	2.7 to 32.92
	Sour Cream, Imitation	19.52
	Yogurt, Non-Dairy	1.8 to 3.5
	Imitation Cheese	32
	Non-Dairy Ice Cream	8.94
	Non-Milk-Based Meal Replacements	3.57 to 5.56
Fats and Oils	Margarine, and Margarine-Like Spreads	0.06 to 99.97
	Mayonnaise and Mayonnaise-Type Dressings	0.16 to 74.85
	Salad Dressings (Regular and Low Calorie)	0.10 to 57.85
Frozen Dairy Desserts and Mixes	Frozen Yogurt	3.6 to 6.25
	Ice Cream and Frozen Milk Desserts	0.76 to 25.26
Gelatins, Puddings, and Fillings	Puddings, Custards and Other Milk Desserts	1.76 to 24.29
Grain Products and Pastas	Frozen Grain-Based Meals	1.56 to 14.43
	Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	0.1 to 44.37
	Grain-Based Patties	4.64
Gravies and Sauces	White Sauces and Milk Gravies	1.07 to 21.2
Hard Candy	Hard Candy	0.2 to 23.98
Foods for Infants and Young Children 1 through 3 Years of Age	Infant Formulas	1.94 to 4.39
	Cereal, Baby Food	0.4 to 9.9
	Milk Desserts, Baby Food	0.98 to 2
	Fruits and Fruit Mixtures, Baby Food	0.05 to 2.24
	Fruit Juices, Baby Food	0.1 to 0.8
	Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0.02 to 4
	Vegetable and Vegetable Mixtures, Baby Food	0.1 to 3.6
	Cookies, Bars, and Nonsweet Crackers, Baby Foods	0.87 to 28.57
	Grain Mixtures, Baby Food	1.1 to 2.6
Milk Products	Flavored Milk and Milk Drinks	0.06 to 13.7
	Milk-Based Meal Replacements	0.6 to 17.14
	Snack Dips	6.31 to 45.84
Plant Protein Products	Meat Analogs	0.5 to 29.52
Soups and Soup Mixes	Grain Based Soups	0.12 to 6.41
Soft Candy	Candies and Chocolate	0.02 to 48.84
Snack Foods	Grain-Based Salty Snacks	2.8 to 58.78

Table 3-1 Summary of the Individual Proposed Food Uses and Use Levels for OPO-Fat in the U.S.

Food Category (21 CFR §170.3) (U.S. FDA, 2020a)[a]	Food Uses[b]	OPO-Fat Use Levels (g/100 g)[c]

CFR = *Code of Federal Regulations*; FNDDS = Food and Nutrient Database for Dietary Studies; NHANES = National Health and Nutrition Examination Survey; U.S. = United States.

[a] Food categories were determined using the general food categories in 21 CFR §170.3(n) as a guide (U.S. FDA, 2020a), with the exception of "Foods for infants and young children 1 through 3 years of age", which was assigned its own food category and is named according to 21 CFR §101.12 (U.S. FDA, 2020b).

[b] OPO-fat is intended for use in unstandardized products and not in foods where standards of identity exist and do not permit its addition.

[c] Range of total fat nutrient values associated with food codes selected for each individual food use. Total fat nutrient values were applied in the assessment assuming OPO-fat would replace 70% of total fat in infant formulas and 100% of total fat in all other proposed food uses. Total fat values associated with food codes from the 2017-2018 NHANES were obtained from the 2017-2018 FNDDS (USDA ARS, 2021).

4.0 FOOD SURVEY RESULTS

Estimates for the total daily intakes of OPO-fat from all proposed food uses in the U.S. are provided in Section 4.1. Estimates for the daily intake of OPO-fat from individual proposed food uses in the U.S. are summarized in Section 4.2 and presented in Tables A-1 to A-9 and B-1 to B-9 of Appendices A and B, respectively.

4.1 Estimated Daily Intake of OPO-Fat from All Proposed Food Uses in the U.S.

Table 4.1-1 summarizes the estimated total intake of OPO-fat (g/person/day) from all proposed food uses in the U.S. population group. Table 4.1-2 presents these data on a per kilogram body weight basis (g/kg body weight/day). The percentage of consumers was high among all age groups evaluated in the current intake assessment; 73.9% of infants 0 to 5 months of age and more than 98.5% of all other population groups consisted of consumers of food products in which OPO-fat is currently proposed for use (see Table 4.1-1). The consumer-only estimates are more relevant to risk assessments as they represent exposures in the target population; consequently, only the consumer-only intake results are discussed in detail herein.

Among the total non-infant population (ages 1 year and older), the mean and 90th percentile consumer-only intakes of OPO-fat were determined to be 37.9 and 68.8 g/person/day, respectively. Of the individual population groups, male adults and male teenagers were determined to have the greatest mean consumer-only intakes of OPO-fat on an absolute basis, at 44.0 g/person/day, while male adults had the greatest 90th percentile consumer-only intakes, at 80.8 g/person/day. Infants 6 to less than 12 months of age had the lowest mean and 90th percentile consumer-only intakes of 17.0 and 29.4 g/person/day, respectively (see Table 4.1-1).

Table 4.1-1 Summary of the Estimated Daily Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data)

Population Group	Age Group	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Infants	0 to <6 m	13.3	29.5	73.9	124	18.0	31.4
Infants	6 to <12 m	16.8	29.4	98.5	137	17.0	29.4
Young Children	1 to 3 y	22.7	44.7	99.6	413	22.8	44.7
Children	4 to 11 y	38.1	63.9	100	890	38.1	63.9
Female Teenagers	12 to 19 y	38.7	65.1	99.8	449	38.8	65.1
Male Teenagers	12 to 19 y	44.0	77.6	100	444	44.0	77.6
Female Adults	20 y and older	32.7	60.7	99.9	2,156	32.7	60.7
Male Adults	20 y and older	43.9	80.8	99.7	1,965	44.0	80.8
Total Non-Infant Population	1 y and older	37.8	68.8	99.8	6,317	37.9	68.8

m = months; n = sample size; NHANES = National Health and Nutrition Examination Survey; U.S. = United States y = years.

On a body weight basis, the total non-infant population (ages 1 year and older) mean and 90th percentile consumer-only intakes of OPO-fat were determined to be 620 and 1,246 mg/kg body weight/day, respectively. Among the individual population groups, infants less than 6 months of age were identified as having the highest mean and 90th percentile consumer-only intakes of any population group, of 2,926 and 5,079 mg/kg body weight/day, respectively. Female adults had the lowest mean and 90th percentile consumer-only intakes of 439 and 797 mg/kg body weight/day, respectively (see Table 4.1-2).

Table 4.1-2 Summary of the Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Proposed Food Uses in the U.S. by Population Group (2017-2018 NHANES Data)

Population Group	Age Group (Years)	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Infants	0 to <6 m	2,162	4,890	73.9	124	2,926	5,079
Infants	6 to <12 m	1,844	3,232	98.5	137	1,873	3,232
Young children	1 to 3 y	1,614	2,904	99.6	403	1,621	2,904
Children	4 to 11 y	1,310	2,296	100	888	1,310	2,296
Female Teenagers	12 to 19 y	642	1,133	99.8	442	643	1,143
Male Teenagers	12 to 19 y	698	1,335	100	441	698	1,335
Female Adults	20 y and older	438	797	99.9	2,138	439	797
Male Adults	20 y and older	501	956	99.7	1,949	502	956
Total Non-Infant Population	1 y and older	619	1,246	99.8	6,261	620	1,246

bw = body weight; m = months; n = sample size; NHANES = National Health and Nutrition Examination Survey; U.S. = United States; y = years.

4.2 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses in the U.S.

Estimates for the mean and 90th percentile daily intakes of OPO-fat from each individual food category are summarized in Tables A-1 to A-9 and B-1 to B-9 on a g/day and mg/kg body weight/day basis, respectively. The total non-infant U.S. population (ages 1 year and older) was identified as being significant consumers of yeast breads and rolls (68.2 to 84.2% consumers), grain mixtures (54.8 to 70.9% consumers), ready-to-eat cereals (25.9 to 56.7% consumers), cookies (29.5 to 53.8% consumers), grain-based salty snacks (30.5 to 48.9% consumers), grain-based crackers (17.4 to 41.6% consumers), and candies and chocolate (25.0 to 39.4%). Infants (ages <12 months) were identified as being significant consumers of infant formula (68.3 to 71.5% consumers), cereal, baby food (18.5 to 55.3% consumers), fruits and fruit mixtures, baby food (14.1 to 45.5% consumers), vegetable and vegetable mixtures, baby food (18.3 to 42.8% consumers), and cookies and bars, baby food (1.8 to 43.8% consumers).

In terms of contribution to total mean intake of OPO-fat, grain mixtures (which contributed 26.1 to 34.0% to total mean intakes) and yeast breads and rolls (which contributed 11.1 to 14.3% to total mean intakes) were the 2 main sources of intake across all non-infant population groups. Among infant population groups, infant formula was the top contributor to total mean intake of OPO-fat (which contributed 71.2 to 98.9% to total mean intakes).

5.0 SUMMARY AND CONCLUSIONS

Consumption data and information pertaining to the individual proposed food uses of OPO-fat were used to estimate the *per capita* and consumer-only intakes of OPO-fat for specific demographic groups and for the total U.S. population. There were a number of assumptions included in the assessment which render exposure estimates that may be considered suitably conservative. For example, it was assumed in the exposure assessment that OPO-fat replaced 70% total fat in infant formula and 100% total fat in all other processed foods. In reality, it is unlikely that OPO-fat will have 100% market penetration in all identified food categories.

In summary, on a consumer-only basis, the resulting mean and 90th percentile intakes of OPO-fat by the total non-infant U.S. population (ages 1 year and older) from all proposed food uses, were estimated to be 37.9 g/person/day (620 mg/kg body weight/day) and 68.8 g/person/day (1,246 mg/kg body weight/day), respectively. Among the individual population groups, the highest mean consumer-only intakes of OPO-fat were determined to be 44.0 g/person/day in male adults and male teenagers (equivalent to 502 and 698 mg/kg body weight/day, respectively), while male adults had the greatest 90th percentile consumer-only intakes of 80.8 g/person/day (956 mg/kg body weight/day). Infants 6 to less than 12 months of age had the lowest mean and 90th percentile consumer-only intakes on an absolute basis, of 17.0 g/person/day and 29.4 g/person/day, respectively. When expressed on a body weight basis, younger population groups (infants, young children, and children) had the highest mean and 90th percentile consumer-only intakes of OPO-fat, of 1,310 to 2,926 and 2,296 to 5,079 mg/kg body weight/day, respectively. Female adults had the lowest mean and 90th percentile consumer-only intakes of 439 and 797 mg/kg body weight/day, respectively.

6.0 REFERENCES

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Appendix A
Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Different Population Groups within the U.S. (2017-2018 NHANES Data)

Table A-1 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged <6 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***13.3***	***29.5***	***73.9***	***124***	***18.0***	***31.4***
Baked Goods and Baking Mixes							
Cakes	0	0	0	0	0	0	0
Cookies	0	0	0	0	0	0	0
Grain-Based Crackers	<0.1	<0.1*	na	0.2	1	0.2*	0.2*
French Toast, Pancakes, and Waffles	0	0	0	0	0	0	0
Pastries	0	0	0	0	0	0	0
Pies	0	0	0	0	0	0	0
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	0	0	0	0	0	0	0
Yeast Breads and Rolls	<0.1	<0.1*	na	1.1	1	0.2*	0.2*
Breakfast Cereals							
Ready-to-Eat Cereals	0	0	0	0	0	0	0
Cereal and Nutrition Bars	0	0	0	0	0	0	0
Cheeses							
Cheese-Based Spreads and Dips	0	0	0	0	0	0	0
Dairy Product Analogs							
Fluid Milk, Imitation	0	0	0	0	0	0	0
Cream Substitutes	0	0	0	0	0	0	0
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	0	0	0	0	0	0	0
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	0	0	0	0	0	0	0
Fats and Oils							
Margarine, and Margarin-Like Spreads	<0.1	<0.1*	na	0.8	2	0.1*	0.1*
Mayonnaise and Mayonnaise-Type Dressings	0	0	0	0	0	0	0
Salad Dressings (Regular and Low Calorie)	0	0	0	0	0	0	0
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0	0	0	0	0	0	0
Ice Cream and Frozen Milk Desserts	0	0	0	0	0	0	0
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0	0	0	0	0	0	0

Table A-1 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged <6 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	0	0	0	0	0	0	0
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	<0.1	<0.1*	na	0.2	1	1.1*	1.1*
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0	0	0	0	0	0	0
Hard Candy							
Hard Candy	0	0	0	0	0	0	0
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	98.9	13.2	29.5	68.3	114	19.3	31.2
Cereal, Baby Food	0.6	0.1	0.3*	18.5	37	0.4	1.1*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0.1	<0.1*	<0.1*	14.1	25	0.1*	0.2*
Fruit Juices, Baby Food	<0.1	<0.1*	na	1	2	<0.1*	<0.1*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	<0.1	<0.1*	na	1.6	4	0.3*	0.5*
Vegetable and Vegetable Mixtures, Baby Food	0.1	<0.1*	<0.1*	18.3	25	0.1*	0.2*
Cookies, Bars, and Nonsweet Crackers, Baby foods	0.2	<0.1*	na	1.8	3	1.1*	1.6*
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0	0	0	0	0	0	0
Milk-Based Meal Replacements	0	0	0	0	0	0	0
Snack Dips	0	0	0	0	0	0	0
Plant Protein Products							
Meat Analogs	0	0	0	0	0	0	0
Soups and Soup Mixes							
Grain Based Soups	0	0	0	0	0	0	0
Soft Candy							
Candies and Chocolate	0	0	0	0	0	0	0
Snack Foods							
Grain-Based Salty Snacks	0	0	0	0	0	0	0

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-2 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged 6 to <12 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***16.8***	***29.4***	***98.5***	***137***	***17.0***	***29.4***
Baked Goods and Baking Mixes							
Cakes	0.1	<0.1*	na	2.6	3	0.7*	0.7*
Cookies	3.4	0.6	1.6*	24.8	32	2.3	4.7*
Grain-Based Crackers	1.0	0.2*	0.5*	17.1	22	1.0*	1.9*
French Toast, Pancakes, and Waffles	1.8	0.3*	1.0*	12.2	14	2.4*	4.2*
Pastries	<0.1	<0.1*	na	1.4	3	0.5*	0.7*
Pies	0	0	0	0	0	0	0
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	1.7	0.3*	0.2*	14.0	19	2.1*	5.1*
Yeast Breads and Rolls	2.3	0.4	0.7*	27.7	33	1.4	4.0*
Breakfast Cereals							
Ready-to-Eat Cereals	0.5	0.1*	0.3*	19.0	23	0.5*	1.1*
Cereal and Nutrition Bars	0.1	<0.1*	na	0.9	2	1.2*	1.2*
Cheeses							
Cheese-Based Spreads and Dips	0	0	0	0	0	0	na
Dairy Product Analogs							
Fluid Milk, Imitation	0.8	0.1*	na	2.0	4	6.3*	10.6*
Cream Substitutes	<0.1	<0.1*	na	1.7	1	0.1*	0.1*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0.1	<0.1*	na	0.6	1	4.2*	4.2*
Imitation Cheese	0	0	0	0	0	0	0
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	0	0	0	0	0	0	0
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.2	<0.1*	na	4.9	7	0.7*	1.5*
Mayonnaise and Mayonnaise-Type Dressings	0.2	<0.1*	na	3.9	6	0.9*	2.3*
Salad Dressings (Regular and Low Calorie)	0	0	0	0	0	0	0
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0	0	0	0	0	0	0
Ice Cream and Frozen Milk Desserts	0.5	0.1*	na	4.3	6	1.9*	4.4*
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	<0.1	<0.1*	na	2.4	3	0.1*	0.2*

Table A-2 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged 6 to <12 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	0.1	<0.1*	na	0.4	1	5.5*	5.5*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	5.3	0.9	3.2*	25.9	36	3.4	6.5*
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.2	<0.1*	na	0.7	2	4.0*	5.2*
Hard Candy							
Hard Candy	<0.1	<0.1*	na	0.2	1	<0.1*	<0.1*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	71.2	12.0	26.2	71.5	98	16.7	28.3
Cereal, Baby Food	2.9	0.5	1.4	55.3	80	0.9	2.0
Milk Desserts, Baby Food	<0.1	<0.1*	na	0.3	1	1.0*	1.0*
Fruits and Fruit Mixtures, Baby Food	0.6	0.1	0.3*	45.5	71	0.2	0.4*
Fruit Juices, Baby Food	<0.1	<0.1*	na	7.4	10	0.1*	0.1*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0.1	<0.1*	<0.1*	13.9	19	0.1*	0.3*
Vegetable and Vegetable Mixtures, Baby Food	1.4	0.2	0.4*	42.8	62	0.6	2.0*
Cookies, Bars, and Nonsweet Crackers, Baby foods	2.3	0.4	1.4*	43.8	62	0.9	2.5*
Grain Mixtures, Baby Food	0.3	0.1*	na	4.5	5	1.2*	1.4*
Milk Products							
Flavored Milk and Milk Drinks	<0.1	<0.1*	na	0.2	1	0.8*	0.8*
Milk-Based Meal Replacements	0	0	0	0	0	0	0
Snack Dips	0	0	0	0	0	0	0
Plant Protein Products							
Meat Analogs	0.1	<0.1*	na	0.5	1	4.1*	4.1*
Soups and Soup Mixes							
Grain Based Soups	0.2	<0.1*	na	2.4	3	1.3*	1.5*
Soft Candy							
Candies and Chocolate	0.1	<0.1*	na	4.4	5	0.4*	0.8*
Snack Foods							
Grain-Based Salty Snacks	2.2	0.4*	0.6*	14	21	2.7*	6.2*

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-3 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Young Children Aged 1 to 3 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***22.7***	***44.7***	***99.6%***	***413***	***22.8***	***44.7***
Baked Goods and Baking Mixes							
Cakes	1.9	0.4	na	9.4	38	4.5	9.1*
Cookies	8.8	2.0	6.5	51.3	208	3.9	8.7
Grain-Based Crackers	6.1	1.4	4.6	41.6	175	3.3	7.1
French Toast, Pancakes, and Waffles	5.0	1.1	3.8	31.1	114	3.7	6.5
Pastries	5.0	1.1	5.1*	17.2	62	6.6	9.7*
Pies	0.4	0.1*	na	2.5	5	4.0*	4.6*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.6	0.8	2.5*	21.2	78	3.9	10.4*
Yeast Breads and Rolls	14.0	3.2	8.5	68.2	279	4.7	10.4
Breakfast Cereals							
Ready-to-Eat Cereals	2.1	0.5	1.4	56.5	232	0.8	1.7
Cereal and Nutrition Bars	1.5	0.3	1.4*	11.7	40	3.0	6.4*
Cheeses							
Cheese-Based Spreads and Dips	0.2	<0.1*	na	2.4	11	1.6*	3.3*
Dairy Product Analogs							
Fluid Milk, Imitation	0.8	0.2*	na	5.8	20	3.1*	6.9*
Cream Substitutes	0.1	<0.1*	na	2.5	8	0.8*	2.9*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	<0.1	<0.1*	na	0.1	1	2.6*	2.6*
Imitation Cheese	0.1	<0.1*	na	0.3	1	4.5*	4.5*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	0.5	1	0.2*	0.2*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.5	0.1	0.1*	17.2	73	0.7	1.9*
Mayonnaise and Mayonnaise-Type Dressings	1.5	0.3	1.0*	12.0	56	2.9	5.6*
Salad Dressings (Regular and Low Calorie)	0.8	0.2	na	8.8	31	2.1	3.5*
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	<0.1	<0.1*	na	0.5	3	0.5*	0.9*
Ice Cream and Frozen Milk Desserts	4.4	1.0	3.8*	19.0	66	5.3	10.4*
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.1	<0.1*	na	1.2	5	1.4*	1.8*

Table A-3 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Young Children Aged 1 to 3 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	2.3	0.5	na	8.3	35	6.2	11.8*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	27.8	6.3	16.8	67.3	265	9.4	21.1
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.1	<0.1*	na	1.1	7	2.8*	5.3*
Hard Candy							
Hard Candy	<0.1	<0.1	<0.1*	10.1	45	<0.1	<0.1*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	1.3	0.3*	na	4.1	18	7.0*	15.1*
Cereal, Baby Food	0.1	<0.1*	na	4.4	22	0.7*	1.0*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<0.1*	na	4.1	18	0.1*	0.2*
Fruit Juices, Baby Food	<0.1	<0.1*	na	1.0	5	0.2*	0.2*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	<0.1	<0.1*	na	3.0	14	0.2*	0.3*
Vegetable and Vegetable Mixtures, Baby Food	<0.1	<0.1*	na	3.3	16	0.2*	0.4*
Cookies, Bars, and Nonsweet Crackers, Baby foods	0.1	<0.1*	na	3.2	18	0.7*	1.7*
Grain Mixtures, Baby Food	<0.1	<0.1*	na	0.5	4	0.9*	2.0*
Milk Products							
Flavored Milk and Milk Drinks	1.3	0.3	0.4*	23.4	56	1.3	4.3*
Milk-Based Meal Replacements	0.1	<0.1*	na	1.2	6	1.2*	3.6*
Snack Dips	0.7	0.2*	na	1.7	6	10.0*	17.4*
Plant Protein Products							
Meat Analogs	0.1	<0.1*	na	1.8	4	1.5*	1.1*
Soups and Soup Mixes							
Grain Based Soups	0.6	0.1	na	6.7	36	2.0	3.3*
Soft Candy							
Candies and Chocolate	1.8	0.4	1.1	32.6	122	1.3	3.4
Snack Foods							
Grain-Based Salty Snacks	6.8	1.5	5.1	43.0	178	3.6	8.2

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-4 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Children Aged 4 to 11 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***38.1***	***63.9***	***100%***	***890***	***38.1***	***63.9***
Baked Goods and Baking Mixes							
Cakes	3.7	1.4	4.9	13.5	124	10.6	22.5
Cookies	7.9	3.0	8.3	53.8	427	5.6	12.4
Grain-Based Crackers	3.0	1.2	4.9	30.3	250	3.8	9.2
French Toast, Pancakes, and Waffles	4.0	1.5	5.9	24.8	196	6.1	12.6
Pastries	5.9	2.2	8.4	24.9	217	9.0	19.8
Pies	0.4	0.1*	na	2.4	20	5.6*	9.9*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	2.9	1.1	4.3	21.4	183	5.2	10.7
Yeast Breads and Rolls	13.2	5.0	12.3	83.5	714	6.0	13.1
Breakfast Cereals							
Ready-to-Eat Cereals	2.2	0.9	2.3	56.7	525	1.5	3.3
Cereal and Nutrition Bars	1.4	0.5	2.0	15.8	103	3.3	6.6
Cheeses							
Cheese-Based Spreads and Dips	0.3	0.1	na	4.1	38	3.1	4.9*
Dairy Product Analogs							
Fluid Milk, Imitation	0.1	0.1*	na	3.3	29	1.6*	2.5*
Cream Substitutes	0.1	<0.1*	na	2.4	16	0.9*	2.1*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	<0.1	<0.1*	na	0.1	1	4.5*	4.5*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	0.3	1	0.3*	0.3*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.7	0.3	0.3	13.7	126	1.9	4.6
Mayonnaise and Mayonnaise-Type Dressings	2.6	1.0	5.2	19.8	168	5.0	10.5
Salad Dressings (Regular and Low Calorie)	2.8	1.1	3.3	20.0	154	5.3	13.1
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	<0.1*	na	1.2	10	2.0*	3.3*
Ice Cream and Frozen Milk Desserts	5.9	2.2	9.0	27.5	234	8.1	14.3
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.2	0.1*	na	2.5	23	3.3*	5.4*

Table A-4 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Children Aged 4 to 11 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.7	0.7	na	9.7	80	6.7	11.7
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	26.8	10.2	25.2	70.9	633	14.4	30.6
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.2	0.1*	na	3.0	27	3.2*	4.9*
Hard Candy							
Hard Candy	<0.1	<0.1	<0.1	13.8	127	<0.1	0.1
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	<0.1	<0.1*	na	0.2	3	6.1*	9.8*
Cereal, Baby Food	<0.1	<0.1*	na	0.1	1	0.6*	0.6*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<0.1*	na	0.1	1	0.1*	0.1*
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	<0.1	<0.1*	na	0.1	1	0.1*	0.1*
Cookies, Bars, and Nonsweet Crackers, Baby foods	<0.1	<0.1*	na	0.1	2	1.2*	1.9*
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0.9	0.3	0.4	18.5	152	1.9	5.4
Milk-Based Meal Replacements	0.2	0.1*	na	1.8	14	4.1*	7.9*
Snack Dips	0.6	0.2*	na	2.6	26	8.9*	20.7*
Plant Protein Products							
Meat Analogs	0.1	<0.1*	na	1.2	11	1.6*	2.8*
Soups and Soup Mixes							
Grain Based Soups	1.0	0.4	na	9.7	102	4.1	6.8
Soft Candy							
Candies and Chocolate	2.7	1.0	2.9	39.4	342	2.6	6.5
Snack Foods							
Grain-Based Salty Snacks	8.3	3.2	9.6	48.9	419	6.5	13.4

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-5 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Female Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***38.7***	***65.1***	***99.8***	***449***	***38.8***	***65.1***
Baked Goods and Baking Mixes							
Cakes	3.7	1.4	2.5*	11.9	58	12.3	24.8*
Cookies	5.0	1.9	7.4	34.8	145	5.6	13.1
Grain-Based Crackers	3.1	1.2	4.8	25.0	89	4.8	12.8
French Toast, Pancakes, and Waffles	2.5	1.0	4.2*	14.6	57	6.6	11.4*
Pastries	3.1	1.2	4.6*	12.5	79	9.7	17.8*
Pies	0.6	0.2*	na	2.9	8	7.7*	13.1*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	2.4	0.9	3.6*	16.8	74	5.6	13.6*
Yeast Breads and Rolls	11.1	4.3	11.8	71.9	307	6.0	13.3
Breakfast Cereals							
Ready-to-Eat Cereals	1.7	0.7	2.3	36.9	155	1.8	3.5
Cereal and Nutrition Bars	1.7	0.6	2.0*	15.4	51	4.2	11.8*
Cheeses							
Cheese-Based Spreads and Dips	0.3	0.1*	na	1.6	7	8.0*	11.3*
Dairy Product Analogs							
Fluid Milk, Imitation	0.4	0.1*	na	8.2	23	1.8*	2.3*
Cream Substitutes	0.5	0.2*	na	5.6	27	3.3*	7.6*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	<0.1	<0.1*	na	1.2	1	1.5*	1.5*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	0.2	1	7.0*	7.0*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.8	0.3	0.1*	12.9	43	2.3	5.6*
Mayonnaise and Mayonnaise-Type Dressings	3.7	1.4	5.2	21.4	100	6.7	10.5
Salad Dressings (Regular and Low Calorie)	5.8	2.2	8.5	25.8	97	8.7	22.7
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.3	0.1*	na	1.9	8	6.3*	10.0*
Ice Cream and Frozen Milk Desserts	8.4	3.2	12.5	29.2	110	11.1	16.8
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.1	<0.1*	na	0.7	7	4.3*	7.1*

Table A-5 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Female Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.5	0.6	na	7.2	31	7.9	12.2*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	29.8	11.5	31.8	63.2	299	18.3	37.6
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.5	0.2	na	3.5	18	5.3	8.3
Hard Candy							
Hard Candy	<0.1	<0.1	na	9.1	48	<0.1	<0.1*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0	0	0	0	0	0	0
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<0.1*	na	0.1	1	0.1*	0.1*
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	1.0	0.4	na	9.1	40	4.2	10.9*
Milk-Based Meal Replacements	0.3	0.1*	na	4.7	10	2.4*	8.9*
Snack Dips	1.2	0.5*	na	4.0	21	11.9*	24.4*
Plant Protein Products							
Meat Analogs	<0.1	<0.1*	na	1.1	4	0.3*	0.5*
Soups and Soup Mixes							
Grain Based Soups	1.2	0.5	na	9.6	55	5.0	10.3*
Soft Candy							
Candies and Chocolate	2.6	1.0	3.9	27.2	134	3.7	8.0
Snack Foods							
Grain-Based Salty Snacks	6.6	2.6	7.7	42.7	189	6.0	14.0

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-6 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Male Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***44.0***	***77.6***	***100***	***444***	***44.0***	***77.6***
Baked Goods and Baking Mixes							
Cakes	3.8	1.7	na	9.6	47	12.3	35.5*
Cookies	5.3	2.3	7.3	32.7	155	7.1	17.2
Grain-Based Crackers	1.7	0.7	3.2*	17.4	58	4.2	7.9*
French Toast, Pancakes, and Waffles	3.8	1.6	5.7*	13.7	57	12.1	30.0*
Pastries	3.9	1.7	6.0*	15.6	78	11.0	20.4*
Pies	0.6	0.3*	na	2.0	10	12.8*	21.1*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	2.2	1.0	2.6*	19.8	79	4.8	12.0*
Yeast Breads and Rolls	13.7	6.0	16.0	84.2	356	7.2	16.3
Breakfast Cereals							
Ready-to-Eat Cereals	1.7	0.7	2.4	41.3	178	1.8	3.7
Cereal and Nutrition Bars	1.0	0.4	1.0*	10.3	46	4.2	8.5*
Cheeses							
Cheese-Based Spreads and Dips	<0.1	<0.1*	na	0.1	2	3.1*	4.3*
Dairy Product Analogs							
Fluid Milk, Imitation	0.1	<0.1*	na	2.8	12	1.7*	4.1*
Cream Substitutes	0.5	0.2*	na	4.0	17	5.2*	9.2*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	<0.1	<0.1*	na	0.1	1	3.4*	3.4*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	<0.1	1	3.0*	3.0*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.3	0.1	na	9.1	35	1.2	2.9*
Mayonnaise and Mayonnaise-Type Dressings	4.6	2.0	10.0	26.8	105	7.5	12.9
Salad Dressings (Regular and Low Calorie)	2.7	1.2	3.1*	12.6	58	9.5	26.2*
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	0.1*	na	1.2	6	4.4*	5.8*
Ice Cream and Frozen Milk Desserts	4.1	1.8	8.7	17.8	84	10.0	18.0
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	<0.1	<0.1*	na	0.7	5	2.4*	2.7*

Table A-6 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Male Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	3.1	1.4	na	9.7	37	13.9	21.8*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	34.0	14.9	38.6	66.4	310	22.5	43.4
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.3	0.1*	na	3.8	13	3.2*	4.8*
Hard Candy							
Hard Candy	<0.1	<0.1*	na	4.7	22	<0.1*	<0.1*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	<0.1	<0.1*	na	0.3	1	8.3*	8.3*
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0	0	0	0	0	0	0
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	1.1	0.5	<0.1*	10.3	42	4.6	17.1*
Milk-Based Meal Replacements	0.3	0.1*	na	6.3	21	2.1*	5.5*
Snack Dips	1.0	0.4*	na	3.1	17	14.7*	31.9*
Plant Protein Products							
Meat Analogs	0	na	na	0	0	na	na
Soups and Soup Mixes							
Grain Based Soups	1.1	0.5	0.6*	10.8	51	4.6	7.4*
Soft Candy							
Candies and Chocolate	2.3	1.0	3.3	27.6	126	3.7	7.8
Snack Foods							
Grain-Based Salty Snacks	6.8	3.0	9.8	37.5	167	8.0	16.4

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-7 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Female Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***32.7***	***60.7***	***99.9***	***2,156***	***32.7***	***60.7***
Baked Goods and Baking Mixes							
Cakes	4.7	1.5	3.8	14.0	293	12.3	26.8
Cookies	5.4	1.8	6.0	32.8	680	5.4	10.6
Grain-Based Crackers	1.8	0.6	2.2	27.1	508	2.1	5.2
French Toast, Pancakes, and Waffles	1.7	0.6	na	9.7	189	5.8	10.7
Pastries	3.8	1.3	5.5	16.9	397	7.4	14.1
Pies	1.2	0.4	na	3.9	88	10.2	18.7
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.4	1.1	3.6	22.2	536	5.0	10.4
Yeast Breads and Rolls	11.9	3.9	10.4	75.8	1,624	5.2	11.8
Breakfast Cereals							
Ready-to-Eat Cereals	1.3	0.4	1.4	25.9	518	1.7	4.0
Cereal and Nutrition Bars	1.6	0.5	2.0	11.6	177	4.6	8.5
Cheeses							
Cheese-Based Spreads and Dips	0.3	0.1	na	3.2	50	3.5	7.8*
Dairy Product Analogs							
Fluid Milk, Imitation	0.4	0.1	na	7.9	153	1.4	2.7
Cream Substitutes	3.1	1.0	2.8	27.2	615	3.7	7.1
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	0.1	<0.1*	na	0.4	4	7.3*	8.4*
Non-Dairy Ice Cream	0.1	<0.1*	na	0.4	2	10.0*	12.8*
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	1.2	11	1.2*	2.0*
Fats and Oils							
Margarine, and Margarin-Like Spreads	1.4	0.5	0.9	19.3	423	2.4	6.0
Mayonnaise and Mayonnaise-Type Dressings	4.3	1.4	5.2	27.6	641	5.1	10.5
Salad Dressings (Regular and Low Calorie)	6.8	2.2	7.6	35.8	671	6.2	14.0
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	<0.1*	na	1.4	19	3.2*	5.7*
Ice Cream and Frozen Milk Desserts	4.9	1.6	6.6	19.4	382	8.3	17.6
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.3	0.1	na	2.7	61	4.2	7.2*

Table A-7 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Female Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.4	0.5	na	5.0	98	9.3	18.0
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	26.1	8.5	25.4	54.8	1,190	15.6	32.9
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.4	0.1	na	4.0	67	3.3	6.6*
Hard Candy							
Hard Candy	<0.1	<0.1	na	3.9	114	<0.1	<0.1
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0	0	0	0	0	0	0
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0	0	0	0	0	0	0
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0.7	0.2	na	6.8	166	3.2	6.6
Milk-Based Meal Replacements	0.8	0.3	na	5.5	100	4.9	9.6
Snack Dips	1.4	0.4	na	3.9	55	11.6	27.5*
Plant Protein Products							
Meat Analogs	0.2	0.1	na	2.2	48	2.8	6.6*
Soups and Soup Mixes							
Grain Based Soups	0.5	0.2	na	5.3	146	3.3	6.8
Soft Candy							
Candies and Chocolate	4.2	1.4	5.6	33.3	634	4.1	9.4
Snack Foods							
Grain-Based Salty Snacks	5.3	1.7	5.6	35.6	663	4.8	10.9

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-8 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Male Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***43.9***	***80.8***	***99.7***	***1,965***	***44.0***	***80.8***
Baked Goods and Baking Mixes							
Cakes	4.1	1.8	5.5	12.8	248	12.3	34.1
Cookies	5.6	2.5	8.1	29.5	597	8.3	15.6
Grain-Based Crackers	1.8	0.8	2.9	22.2	370	3.5	6.3
French Toast, Pancakes, and Waffles	1.6	0.7	na	8.4	154	8.4	16.8
Pastries	4.5	2.0	7.6	18.8	355	10.4	20.4
Pies	1.2	0.5	na	4.4	99	12.2	20.9
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.4	1.5	5.4	22.7	483	6.6	13.2
Yeast Breads and Rolls	14.3	6.3	15.3	83.5	1,612	7.5	16.1
Breakfast Cereals							
Ready-to-Eat Cereals	1.1	0.5	1.7	25.9	506	1.9	4.4
Cereal and Nutrition Bars	1.3	0.6	2.0	11.6	143	4.9	8.9
Cheeses							
Cheese-Based Spreads and Dips	0.5	0.2	na	3.3	34	6.2	11.3*
Dairy Product Analogs							
Fluid Milk, Imitation	0.2	0.1	na	5.8	91	1.6	3.0
Cream Substitutes	1.7	0.7	1.9	19.6	440	3.7	9.1
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	<0.1	<0.1*	na	0.2	3	4.5*	4.5*
Non-Dairy Ice Cream	<0.1	<0.1*	na	0.4	2	2.4*	2.5*
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	<0.1	1	2.0*	2.0*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.9	0.4	0.1	15.8	401	2.5	6.3
Mayonnaise and Mayonnaise-Type Dressings	4.9	2.1	7.9	33.3	630	6.4	10.5
Salad Dressings (Regular and Low Calorie)	5.9	2.6	9.8	28	469	9.3	21.3
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	<0.1*	na	0.8	19	3.4*	5.7*
Ice Cream and Frozen Milk Desserts	4.9	2.1	9.0	20.3	377	10.5	19.5
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.3	0.1	na	2.7	54	5.0	8.3*

Table A-8 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by Male Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.8	0.8	na	5.6	86	14.5	27.3
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	28.8	12.7	35.4	56.1	1,039	22.6	46.9
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.4	0.2	na	3.6	72	4.3	6.7*
Hard Candy							
Hard Candy	<0.1	<0.1	na	4.7	82	<0.1	0.1
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0	0	0	0	0	0	0
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0	0	0	0	0	0	0
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0.9	0.4	na	5.6	112	7.1	17.1
Milk-Based Meal Replacements	0.6	0.3	na	5.9	94	4.5	9.4
Snack Dips	0.8	0.4	na	3.3	47	11.1	20.6*
Plant Protein Products							
Meat Analogs	0.1	<0.1*	na	1.7	26	2.0*	2.5*
Soups and Soup Mixes							
Grain Based Soups	0.6	0.3	na	6.4	132	4.4	9.9
Soft Candy							
Candies and Chocolate	2.7	1.2	4.3	25.0	444	4.7	11.3
Snack Foods							
Grain-Based Salty Snacks	5.0	2.2	7.5	30.5	541	7.2	16.2

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table A-9 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by the U.S. Population Aged 1 Year and Older (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***37.8***	***68.8***	***99.8%***	***6,317***	***37.9***	***68.8***
Baked Goods and Baking Mixes							
Cakes	4.2	1.6	3.8	13.0	808	12.2	27.0
Cookies	5.8	2.2	7.4	34.6	2,212	6.3	12.6
Grain-Based Crackers	2.1	0.8	2.8	25.6	1,450	3.0	6.0
French Toast, Pancakes, and Waffles	2.2	0.8	2.6	12.1	767	6.8	14.6
Pastries	4.3	1.6	6.7	18.1	1,188	9.0	17.4
Pies	1.0	0.4	na	3.7	230	10.6	20.4
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.2	1.2	4.6	21.8	1,433	5.6	11.9
Yeast Breads and Rolls	13.2	5.0	12.8	79.3	4,892	6.3	14.2
Breakfast Cereals							
Ready-to-Eat Cereals	1.4	0.5	1.7	31.6	2,114	1.7	3.7
Cereal and Nutrition Bars	1.4	0.5	2.0	12.1	560	4.4	8.5
Cheeses							
Cheese-Based Spreads and Dips	0.4	0.1	na	3.1	142	4.6	11.7
Dairy Product Analogs							
Fluid Milk, Imitation	0.3	0.1	na	6.3	328	1.6	3.0
Cream Substitutes	1.8	0.7	1.6	18.6	1,123	3.7	8.1
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	<0.1	<0.1*	na	na	1	2.6*	2.6*
Imitation Cheese	<0.1	<0.1*	na	0.3	11	5.3*	8.4*
Non-Dairy Ice Cream	<0.1	<0.1*	na	0.3	4	6.4*	11.1*
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	0.5	16	1.3*	2.0*
Fats and Oils							
Margarine, and Margarin-Like Spreads	1.0	0.4	0.3	16.5	1,101	2.3	6.0
Mayonnaise and Mayonnaise-Type Dressings	4.3	1.6	5.2	27.9	1,700	5.8	10.5
Salad Dressings (Regular and Low Calorie)	5.6	2.1	6.5	28.6	1,480	7.4	17.0
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	<0.1	na	1.2	65	3.4	6.7*
Ice Cream and Frozen Milk Desserts	5.1	1.9	7.9	20.9	1,253	9.2	17.6
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.3	0.1	na	2.4	155	4.3	8.0

Table A-9 Estimated Daily Intake of OPO-Fat from Individual Proposed Food Uses by the U.S. Population Aged 1 Year and Older (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (g/day)		Consumer-Only Intake (g/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.8	0.7	na	6.2	367	10.8	21.9
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	28.1	10.6	30.5	58.5	3,736	18.1	37.6
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.4	0.1	na	3.6	204	3.7	6.7
Hard Candy							
Hard Candy	<0.1	<0.1	na	5.8	438	<0.1	0.1
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	<0.1	<0.1*	na	0.2	22	7.0*	13.4*
Cereal, Baby Food	<0.1	<0.1*	na	0.2	23	0.7*	1.0*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<0.1*	na	0.2	20	0.1*	0.2*
Fruit Juices, Baby Food	<0.1	<0.1*	na	na	5	0.2*	0.2*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	<0.1	<0.1*	na	0.1	14	0.2*	0.3*
Vegetable and Vegetable Mixtures, Baby Food	<0.1	<0.1*	na	0.1	17	0.2*	0.3*
Cookies, Bars, and Nonsweet Crackers, Baby foods	<0.1	<0.1*	na	0.1	20	0.7*	1.7*
Grain Mixtures, Baby Food	<0.1	<0.1*	na	na	4	0.9*	2.0*
Milk Products							
Flavored Milk and Milk Drinks	0.8	0.3	na	8.5	568	3.8	13.2
Milk-Based Meal Replacements	0.6	0.2	na	5.1	245	4.3	9.4
Snack Dips	1.0	0.4	na	3.4	172	11.3	27.5
Plant Protein Products							
Meat Analogs	0.1	<0.1	na	1.7	93	2.3	4.7
Soups and Soup Mixes							
Grain Based Soups	0.7	0.3	na	6.7	522	4.0	8.8
Soft Candy							
Candies and Chocolate	3.2	1.2	4.3	30.3	1,802	3.9	9.4
Snack Foods							
Grain-Based Salty Snacks	5.7	2.1	7.4	35.8	2,157	6.0	13.4

n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Appendix B
Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Different Population Groups within the U.S. (2017-2018 NHANES Data)

Table B-1 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged <6 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***2,162***	***4,890***	***73.9***	***124***	***2,926***	***5,079***
Baked Goods and Baking Mixes							
Cakes	0	0	0	0	0	0	0
Cookies	0	0	0	0	0	0	0
Grain-Based Crackers	<0.1	<1*	na	0.2	1	34*	34*
French Toast, Pancakes, and Waffles	0	0	0	0	0	0	0
Pastries	0	0	0	0	0	0	0
Pies	0	0	0	0	0	0	0
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	0	0	0	0	0	0	0
Yeast Breads and Rolls	<0.1	<1*	na	1.1	1	20*	20*
Breakfast Cereals							
Ready-to-Eat Cereals	0	0	0	0	0	0	0
Cereal and Nutrition Bars	0	0	0	0	0	0	0
Cheeses							
Cheese-Based Spreads and Dips	0	0	0	0	0	0	0
Dairy Product Analogs							
Fluid Milk, Imitation	0	0	0	0	0	0	0
Cream Substitutes	0	0	0	0	0	0	0
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	0	0	0	0	0	0	0
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	0	0	0	0	0	0	0
Fats and Oils							
Margarine, and Margarin-Like Spreads	<0.1	<1*	na	0.8	2	12*	12*
Mayonnaise and Mayonnaise-Type Dressings	0	0	0	0	0	0	0
Salad Dressings (Regular and Low Calorie)	0	0	0	0	0	0	0
Frozen Dairy Desserts and Mixes	0	0	0	0	0	0	0
Frozen Yogurt	0	0	0	0	0	0	0
Ice Cream and Frozen Milk Desserts	0	0	0	0	0	0	0
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0	0	0	0	0	0	0

Table B-1 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged <6 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	0	0	0	0	0	0	0
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	<0.1	<1*	na	0.2	1	149*	149*
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0	0	0	0	0	0	0
Hard Candy							
Hard Candy	0	0	0	0	0	0	0
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	99.1	2,142	4,890	68.3	114	3,136	5,101
Cereal, Baby Food	0.5	11	30*	18.5	37	60	146*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0.1	2*	7*	14.1	25	16*	29*
Fruit Juices, Baby Food	<0.1	<1*	na	1.0	2	4*	5*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	<0.1	1*	na	1.6	4	43*	67*
Vegetable and Vegetable Mixtures, Baby Food	0.1	2*	6*	18.3	25	12*	30*
Cookies, Bars, and Nonsweet Crackers, Baby foods	0.1	3*	na	1.8	3	155*	222*
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0	0	0	0	0	0	0
Milk-Based Meal Replacements	0	0	0	0	0	0	0
Snack Dips	0	0	0	0	0	0	0
Plant Protein Products							
Meat Analogs	0	0	0	0	0	0	0
Soups and Soup Mixes							
Grain Based Soups	0	0	0	0	0	0	0
Soft Candy							
Candies and Chocolate	0	0	0	0	0	0	0
Snack Foods							
Grain-Based Salty Snacks	0	0	0	0	0	0	0

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-2 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged 6 to <12 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***1,844***	***3,232***	***98.5***	***137***	***1,873***	***3,232***
Baked Goods and Baking Mixes							
Cakes	0.1	2*	na	2.6	3	78*	83*
Cookies	3.3	61	177*	24.8	32	247	474*
Grain-Based Crackers	1.0	19*	52*	17.1	22	109*	210*
French Toast, Pancakes, and Waffles	1.8	33*	109*	12.2	14	269*	486*
Pastries	<0.1	1*	na	1.4	3	52*	82*
Pies	0	0	0	0	0	0	0
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	1.7	31*	22*	14.0	19	218*	512*
Yeast Breads and Rolls	2.3	43	70*	27.7	33	155	451*
Breakfast Cereals							
Ready-to-Eat Cereals	0.5	10*	31*	19.0	23	53*	119*
Cereal and Nutrition Bars	0.1	1*	na	0.9	2	123*	132*
Cheeses							
Cheese-Based Spreads and Dips	0	0	0	0	0	0	0
Dairy Product Analogs							
Fluid Milk, Imitation	0.7	13*	na	2.0	4	639*	1,114*
Cream Substitutes	<0.1	<1*	na	1.7	1	9*	9*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0.2	3*	na	0.6	1	565*	565*
Imitation Cheese	0	0	0	0	0	0	0
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	0	0	0	0	0	0	0
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.2	4*	na	4.9	7	71*	159*
Mayonnaise and Mayonnaise-Type Dressings	0.2	4*	na	3.9	6	110*	267*
Salad Dressings (Regular and Low Calorie)	0	0	0	0	0	0	0
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0	0	0	0	0	0	0
Ice Cream and Frozen Milk Desserts	0.5	9*	na	4.3	6	209*	488*
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	<0.1	<1*	na	2.4	3	14*	19*

Table B-2 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Infants Aged 6 to <12 Months within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	0.1	2*	na	0.4	1	676*	676*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	5.1	94	393*	25.9	36	365	732*
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.1	3*	na	0.7	2	405*	520*
Hard Candy							
Hard Candy	<0.1	<1*	na	0.2	1	2*	2*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	71.4	1,317	2,786	71.5	98	1,842	3,047
Cereal, Baby Food	3.0	55	153	55.3	80	100	188
Milk Desserts, Baby Food	<0.1	<1*	na	0.3	1	99*	99*
Fruits and Fruit Mixtures, Baby Food	0.6	12	38*	45.5	71	26	49*
Fruit Juices, Baby Food	<0.1	<1*	na	7.4	10	6*	9*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0.1	2*	6*	13.9	19	14*	26*
Vegetable and Vegetable Mixtures, Baby Food	1.4	26	46*	42.8	62	60	203*
Cookies, Bars, and Nonsweet Crackers, Baby foods	2.3	43	150*	43.8	62	98	252*
Grain Mixtures, Baby Food	0.3	6*	na	4.5	5	140*	165*
Milk Products							
Flavored Milk and Milk Drinks	<0.1	<1*	na	0.2	1	91*	91*
Milk-Based Meal Replacements	0	0	0	0	0	0	0
Snack Dips	0	0	0	0	0	0	0
Plant Protein Products							
Meat Analogs	0.1	2*	na	0.5	1	371*	371*
Soups and Soup Mixes							
Grain Based Soups	0.2	4*	na	2.4	3	149*	168*
Soft Candy							
Candies and Chocolate	0.1	2*	na	4.4	5	44*	85*
Snack Foods							
Grain-Based Salty Snacks	2.3	42*	65*	14.0	21	299*	749*

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-3 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Young Children Aged 1 to 3 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***1,614***	***2,904***	***99.6%***	***403***	***1,621***	***2,904***
Baked Goods and Baking Mixes							
Cakes	1.9	31	na	9.5	37	329	644*
Cookies	8.9	144	443	51.7	205	279	663
Grain-Based Crackers	6.3	102	305	42.4	174	240	542
French Toast, Pancakes, and Waffles	4.9	79	288	31.5	113	249	567
Pastries	4.7	76	339*	16.3	59	465	820*
Pies	0.4	7*	na	2.5	5	276*	316*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.7	61	178*	20.9	75	289	751*
Yeast Breads and Rolls	13.9	224	656	68.9	274	326	775
Breakfast Cereals							
Ready-to-Eat Cereals	2.1	34	101	56.2	226	60	121
Cereal and Nutrition Bars	1.5	24	89*	12.0	40	197	417*
Cheeses							
Cheese-Based Spreads and Dips	0.2	3*	na	2.5	11	112*	218*
Dairy Product Analogs							
Fluid Milk, Imitation	0.9	15*	na	5.9	19	261*	622*
Cream Substitutes	0.1	1*	na	2.5	8	59*	208*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	<0.1	<0.1*	na	0.1	1	229*	229*
Imitation Cheese	0.1	1*	na	0.3	1	378*	378*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	<0.1	<0.1*	na	0.5	1	13*	13*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.5	8	3*	17.5	72	46	118*
Mayonnaise and Mayonnaise-Type Dressings	1.7	27	72*	12.3	56	222	495*
Salad Dressings (Regular and Low Calorie)	0.9	14	na	9.0	31	155	323*
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	<0.1	<1*	na	0.5	3	39*	78*
Ice Cream and Frozen Milk Desserts	4.3	69	288*	19.4	66	356	693*
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.1	2*	na	1.2	5	139*	201*

Table B-3 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Young Children Aged 1 to 3 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	2.4	38	na	8.5	35	447	785*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	27.3	440	1,186	67.9	259	647	1,378
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.2	3*	na	1.2	7	227*	450*
Hard Candy							
Hard Candy	<0.1	<1	<1*	10.2	44	1	2*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	1.6	26*	na	4.2	18	603*	1,272*
Cereal, Baby Food	0.2	3*	na	4.5	22	61*	103*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<1*	na	4.2	18	9*	17*
Fruit Juices, Baby Food	<0.1	<1*	na	1.0	5	16*	23*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	<0.1	<1*	na	3.1	14	14*	30*
Vegetable and Vegetable Mixtures, Baby Food	<0.1	1*	na	3.3	16	19*	34*
Cookies, Bars, and Nonsweet Crackers, Baby foods	0.1	2*	na	3.3	18	61*	142*
Grain Mixtures, Baby Food	<0.1	<1*	na	0.5	4	71*	158*
Milk Products							
Flavored Milk and Milk Drinks	1.1	18	28*	23.7	55	77	295*
Milk-Based Meal Replacements	0.1	1*	na	1.2	6	89*	256*
Snack Dips	0.7	11*	na	1.7	6	639*	1,124*
Plant Protein Products							
Meat Analogs	0.1	2*	na	1.8	4	129*	118*
Soups and Soup Mixes							
Grain Based Soups	0.6	9	na	6.6	34	135	209*
Soft Candy							
Candies and Chocolate	1.8	28	65	32.7	119	87	261
Snack Foods							
Grain-Based Salty Snacks	6.8	109	350	43.0	174	253	515

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.

* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-4 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Children Aged 4 to 11 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***1,310***	***2,296***	***100%***	***888***	***1,310***	***2,296***
Baked Goods and Baking Mixes							
Cakes	3.7	49	150	13.5	124	360	709
Cookies	8.0	105	280	53.8	426	196	450
Grain-Based Crackers	3.2	42	163	30.3	250	137	285
French Toast, Pancakes, and Waffles	4.3	56	179	24.8	196	226	490
Pastries	6.0	79	284	24.9	217	315	675
Pies	0.3	4*	na	2.4	20	181*	331*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.0	40	143	21.4	182	185	426
Yeast Breads and Rolls	13.5	177	444	83.6	713	212	483
Breakfast Cereals							
Ready-to-Eat Cereals	2.3	30	82	56.7	524	52	116
Cereal and Nutrition Bars	1.4	18	67	15.8	103	115	237
Cheeses							
Cheese-Based Spreads and Dips	0.3	4	na	4.1	38	99	172*
Dairy Product Analogs							
Fluid Milk, Imitation	0.1	2*	na	3.4	29	57*	92*
Cream Substitutes	0.1	1*	na	2.4	16	31*	63*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	<0.1	<1*	na	0.1	1	205*	205*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	<0.1	<1*	na	0.3	1	14*	14*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.6	8	10	13.7	126	60	160
Mayonnaise and Mayonnaise-Type Dressings	2.5	33	135	19.9	168	164	301
Salad Dressings (Regular and Low Calorie)	2.7	36	123	20.0	154	179	433
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	1*	na	1.2	10	80*	130*
Ice Cream and Frozen Milk Desserts	5.6	74	308	27.5	234	268	509
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.2	3*	na	2.5	23	107*	201*

Table B-4 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Children Aged 4 to 11 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.6	22	na	9.6	79	223	414*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	26.3	344	876	70.9	632	485	1,060
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.2	3*	na	3.0	27	100*	213*
Hard Candy							
Hard Candy	<0.1	<1	<1	13.8	127	1	3
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	<0.1	1*	na	0.2	3	371*	608*
Cereal, Baby Food	<0.1	<1*	na	0.1	1	31*	31*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<1*	na	0.1	1	3*	3*
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	<0.1	<1*	na	0.1	1	3*	3*
Cookies, Bars, and Nonsweet Crackers, Baby foods	<0.1	<1*	na	0.1	2	67*	105*
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0.9	11	13	18.5	152	62	186
Milk-Based Meal Replacements	0.2	2*	na	1.8	14	129*	188*
Snack Dips	0.5	7*	na	2.6	26	271*	634*
Plant Protein Products							
Meat Analogs	0.1	1*	na	1.2	11	67*	82*
Soups and Soup Mixes							
Grain Based Soups	1.0	14	na	9.6	101	142	302
Soft Candy							
Candies and Chocolate	2.5	33	101	39.5	342	85	251
Snack Foods							
Grain-Based Salty Snacks	8.5	112	353	48.9	418	229	531

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.

* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-5 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Female Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***642***	***1,113***	***99.8***	***442***	***643***	***1,143***
Baked Goods and Baking Mixes							
Cakes	3.8	25	42*	12.1	58	203	403*
Cookies	5.2	33	113	34.8	143	95	205
Grain-Based Crackers	3.1	20	80	25.3	88	79	188
French Toast, Pancakes, and Waffles	2.7	17	66*	14.8	57	115	218*
Pastries	3.4	22	85*	12.7	79	169	336*
Pies	0.5	3*	na	2.9	8	118*	179*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	2.4	16	64*	16.7	73	93	158*
Yeast Breads and Rolls	10.8	69	183	72.3	303	96	218
Breakfast Cereals							
Ready-to-Eat Cereals	1.7	11	34	36.5	152	30	61
Cereal and Nutrition Bars	1.9	12	38*	15.6	51	80	186*
Cheeses							
Cheese-Based Spreads and Dips	0.3	2*	na	1.7	7	119*	151*
Dairy Product Analogs							
Fluid Milk, Imitation	0.4	2*	na	8.0	22	29*	36*
Cream Substitutes	0.4	3*	na	5.5	26	51*	87*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	0.1	<1*	na	1.2	1	29*	29*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	0.1	<1*	na	0.2	1	109*	109*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.7	5	1*	13.1	42	35	85*
Mayonnaise and Mayonnaise-Type Dressings	3.6	23	94	21.2	97	108	184
Salad Dressings (Regular and Low Calorie)	5.9	38	132	26.2	97	144	452
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.3	2*	na	2.0	8	111*	196*
Ice Cream and Frozen Milk Desserts	8.2	53	215	29.4	108	180	319
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.1	<0.1*	na	0.7	7	72*	113*

Table B-5 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Female Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.5	9	na	7.3	31	129	190*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	29.1	187	544	62.9	294	297	663
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.5	3*	na	3.5	18	89*	143*
Hard Candy							
Hard Candy	<0.1	<1	na	9.3	48	0	1*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0	0	0	0	0	0	0
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<1*	na	0.1	1	2*	2*
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	1.0	7	na	9.2	40	73	166*
Milk-Based Meal Replacements	0.4	3*	na	4.7	10	54*	141*
Snack Dips	1.1	7*	na	3.9	20	191*	433*
Plant Protein Products							
Meat Analogs	<0.1	<1*	na	1.1	4	4*	7*
Soups and Soup Mixes							
Grain Based Soups	1.3	8	na	9.8	55	85	156*
Soft Candy							
Candies and Chocolate	2.7	18	72	27.3	132	64	146
Snack Foods							
Grain-Based Salty Snacks	6.8	44	127	43.3	188	101	232

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.

* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-6 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Male Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***698***	***1,335***	***100***	***441***	***698***	***1,335***
Baked Goods and Baking Mixes							
Cakes	4.2	29	na	9.6	47	301	954*
Cookies	6.0	42	102	32.4	153	130	258
Grain-Based Crackers	2.0	14	40*	17.3	57	81	207*
French Toast, Pancakes, and Waffles	3.8	27	84*	13.8	57	194	526*
Pastries	3.9	28	97*	15.5	77	177	487*
Pies	0.6	4*	na	2.1	10	197*	268*
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	2.2	16	52*	19.9	79	78	198*
Yeast Breads and Rolls	13.3	93	235	84.1	353	110	236
Breakfast Cereals							
Ready-to-Eat Cereals	1.7	12	37	41.4	177	28	55
Cereal and Nutrition Bars	1.0	7	11*	10.3	46	65	176*
Cheeses							
Cheese-Based Spreads and Dips	<0.1	<1*	na	0.1	2	49*	69*
Dairy Product Analogs							
Fluid Milk, Imitation	0.1	1*	na	2.9	12	27*	72*
Cream Substitutes	0.4	3*	na	4.1	17	72*	124*
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	<0.1	<1*	na	0.1	1	38*	38*
Non-Dairy Ice Cream	0	0	0	0	0	0	0
Non-Milk-Based Meal Replacement	<0.1	<1*	na	0	1	40*	40*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.2	2	na	9.0	34	19	41*
Mayonnaise and Mayonnaise-Type Dressings	4.6	32	114	26.6	103	121	211
Salad Dressings (Regular and Low Calorie)	2.6	18	37*	12.7	58	144	321*
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	1*	na	1.2	6	64*	89*
Ice Cream and Frozen Milk Desserts	3.7	26	115	17.6	83	147	240
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	<0.1	<1*	na	0.7	5	32*	35*

Table B-6 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Male Teenagers Aged 12 to 19 Years within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	3.6	25	na	9.8	37	259	543*
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	32.2	225	590	66.4	308	339	678
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.3	2*	na	3.8	13	50*	77*
Hard Candy							
Hard Candy	<0.1	<1*	na	4.8	22	<1*	<1*
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0.1	1*	na	0.3	1	200*	200*
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0	0	0	0	0	0	0
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	1.0	7	1*	10.4	42	69	218*
Milk-Based Meal Replacements	0.3	2*	na	6.3	21	29*	79*
Snack Dips	0.9	6*	na	3.1	17	199*	415*
Plant Protein Products							
Meat Analogs	0	0	0	0	0	0	0
Soups and Soup Mixes							
Grain Based Soups	1.3	9	10*	10.5	50	83	158*
Soft Candy							
Candies and Chocolate	2.6	18	52	27.4	125	66	144
Snack Foods							
Grain-Based Salty Snacks	7.2	50	163	37.3	165	135	272

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-7 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Female Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***438***	***797***	***99.9***	***2,138***	***439***	***797***
Baked Goods and Baking Mixes							
Cakes	4.7	21	45	14.0	291	147	339
Cookies	5.5	24	83	32.8	674	73	149
Grain-Based Crackers	1.8	8	26	27.1	501	29	75
French Toast, Pancakes, and Waffles	1.7	8	na	9.7	188	78	144
Pastries	3.9	17	67	16.9	391	100	208
Pies	1.1	5	na	3.9	86	128	231
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.3	15	55	22.2	532	66	136
Yeast Breads and Rolls	11.8	52	139	75.6	1,607	68	156
Breakfast Cereals							
Ready-to-Eat Cereals	1.4	6	18	25.9	512	23	51
Cereal and Nutrition Bars	1.7	8	25	11.6	177	65	120
Cheeses							
Cheese-Based Spreads and Dips	0.3	1	na	3.3	50	45	85*
Dairy Product Analogs							
Fluid Milk, Imitation	0.4	2	na	8.0	152	21	40
Cream Substitutes	3.2	14	38	27.1	609	51	95
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	0.1	1*	na	0.4	4	139*	166*
Non-Dairy Ice Cream	0.1	<1*	na	0.4	2	124*	145*
Non-Milk-Based Meal Replacement	0.1	<1*	na	1.2	11	18*	29*
Fats and Oils							
Margarine, and Margarin-Like Spreads	1.4	6	10	19.3	420	31	88
Mayonnaise and Mayonnaise-Type Dressings	4.2	18	70	27.5	633	67	132
Salad Dressings (Regular and Low Calorie)	7.1	31	106	35.9	669	87	208
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	1*	na	1.4	19	42*	55*
Ice Cream and Frozen Milk Desserts	5.2	23	90	19.5	380	117	241
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.3	1	na	2.7	61	54	108*

Table B-7 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Female Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.4	6	na	5.0	97	122	239
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	25.8	113	332	55.0	1,183	205	435
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.4	2	na	4.0	66	40	76*
Hard Candy							
Hard Candy	<0.1	<1	na	3.9	113	<1	<1
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0	0	0	0	0	0	0
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0	0	0	0	0	0	0
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0.6	3	na	6.8	164	41	117
Milk-Based Meal Replacements	0.9	4	na	5.5	100	73	151
Snack Dips	1.4	6	na	3.9	55	153	411*
Plant Protein Products							
Meat Analogs	0.2	1	na	2.2	48	38	76*
Soups and Soup Mixes							
Grain Based Soups	0.5	2	na	5.3	145	43	90
Soft Candy							
Candies and Chocolate	4.3	19	72	33.3	629	57	135
Snack Foods							
Grain-Based Salty Snacks	5.2	23	72	35.6	657	64	153

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.

* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-8 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Male Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***501***	***956***	***99.7***	***1,949***	***502***	***956***
Baked Goods and Baking Mixes							
Cakes	4.3	22	57	12.8	247	168	325
Cookies	5.6	28	98	29.6	595	96	181
Grain-Based Crackers	1.7	9	31	22.3	368	39	81
French Toast, Pancakes, and Waffles	1.6	8	na	8.4	154	96	214
Pastries	4.4	22	91	18.9	354	118	231
Pies	1.3	6	na	4.3	97	145	309
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.6	18	62	22.7	479	78	163
Yeast Breads and Rolls	14.2	71	163	83.5	1,598	85	174
Breakfast Cereals							
Ready-to-Eat Cereals	1.2	6	19	26.0	502	23	53
Cereal and Nutrition Bars	1.3	7	23	11.6	142	57	110
Cheeses							
Cheese-Based Spreads and Dips	0.5	2	na	3.3	33	72	141*
Dairy Product Analogs							
Fluid Milk, Imitation	0.2	1	na	5.8	90	20	33
Cream Substitutes	1.6	8	20	19.6	438	40	106
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	0	0	0	0	0	0	0
Imitation Cheese	<0.1	<1*	na	0.2	3	49*	50*
Non-Dairy Ice Cream	<0.1	<1*	na	0.4	2	29*	30*
Non-Milk-Based Meal Replacement	<0.1	<1*	na	<0.1	1	18*	18*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.9	5	2	15.7	397	30	69
Mayonnaise and Mayonnaise-Type Dressings	4.9	24	88	33.3	625	73	140
Salad Dressings (Regular and Low Calorie)	5.7	29	92	28.1	466	102	242
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	<1*	na	0.8	19	41*	70*
Ice Cream and Frozen Milk Desserts	4.8	24	100	20.3	375	118	238
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.4	2	na	2.7	53	64	77*

Table B-8 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by Male Adults Aged 20 Years and Older within the U.S. (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.9	9	na	5.5	85	170	313
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	28.7	144	415	56.1	1,030	256	517
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.4	2	na	3.6	72	53	78*
Hard Candy							
Hard Candy	<0.1	<1	na	4.8	82	<1	1
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0	0	0	0	0	0	0
Cereal, Baby Food	0	0	0	0	0	0	0
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	0	0	0	0	0	0	0
Fruit Juices, Baby Food	0	0	0	0	0	0	0
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	0	0	0	0	0	0	0
Vegetable and Vegetable Mixtures, Baby Food	0	0	0	0	0	0	0
Cookies, Bars, and Nonsweet Crackers, Baby foods	0	0	0	0	0	0	0
Grain Mixtures, Baby Food	0	0	0	0	0	0	0
Milk Products							
Flavored Milk and Milk Drinks	0.9	5	na	5.7	112	83	215
Milk-Based Meal Replacements	0.6	3	na	5.9	93	53	110
Snack Dips	0.8	4	na	3.2	46	123	274*
Plant Protein Products							
Meat Analogs	0.1	<1*	na	1.7	26	23*	31*
Soups and Soup Mixes							
Grain Based Soups	0.7	3	na	6.4	131	53	116
Soft Candy							
Candies and Chocolate	2.8	14	49	25.1	442	56	152
Snack Foods							
Grain-Based Salty Snacks	4.8	24	72	30.5	538	79	177

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Table B-9 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by the U.S. Population Aged 1 Year and Older (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
All	***100***	***619***	***1,246***	***99.8%***	***6,261***	***620***	***1,246***
Baked Goods and Baking Mixes							
Cakes	4.0	25	52	13.0	804	191	474
Cookies	6.4	40	114	34.6	2,196	115	239
Grain-Based Crackers	2.6	16	43	25.7	1,438	63	162
French Toast, Pancakes, and Waffles	2.7	17	43	12.1	765	140	293
Pastries	4.6	28	91	18.1	1,177	156	312
Pies	0.9	5	na	3.7	226	145	309
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)	3.2	20	65	21.8	1,420	92	201
Yeast Breads and Rolls	13.1	81	195	79.3	4,848	102	223
Breakfast Cereals							
Ready-to-Eat Cereals	1.6	10	32	31.6	2,093	32	76
Cereal and Nutrition Bars	1.5	9	27	12.2	559	75	164
Cheeses							
Cheese-Based Spreads and Dips	0.3	2	na	3.1	141	67	152
Dairy Product Analogs							
Fluid Milk, Imitation	0.3	2	na	6.3	324	32	50
Cream Substitutes	1.4	9	20	18.6	1,114	47	98
Sour Cream, Imitation	0	0	0	0	0	0	0
Yogurt, Non-Dairy	<0.1	<1*	na	<0.1	1	229*	229*
Imitation Cheese	0.1	<1*	na	0.3	11	109*	175*
Non-Dairy Ice Cream	<0.1	<1*	na	0.3	4	79*	132*
Non-Milk-Based Meal Replacement	<0.1	<1*	na	0.5	16	20*	29*
Fats and Oils							
Margarine, and Margarin-Like Spreads	0.9	6	4	16.5	1,091	34	88
Mayonnaise and Mayonnaise-Type Dressings	3.8	23	87	27.9	1,682	84	165
Salad Dressings (Regular and Low Calorie)	4.8	30	98	28.7	1,475	103	247
Frozen Dairy Desserts and Mixes							
Frozen Yogurt	0.1	1	na	1.2	65	53	92*
Ice Cream and Frozen Milk Desserts	5.1	32	117	21.0	1,246	152	320
Gelatins, Puddings, and Fillings							
Puddings, Custards and Other Milk Desserts	0.3	2	na	2.4	154	65	108

Table B-9 Estimated Daily Per Kilogram Body Weight Intake of OPO-Fat from Individual Proposed Food Uses by the U.S. Population Aged 1 Year and Older (2017-2018 NHANES Data)

Food Use Category	% Contribution to Total Mean Intake	*Per Capita* Intake (mg/kg bw/day)		Consumer-Only Intake (mg/kg bw/day)			
		Mean	90th Percentile	%	n	Mean	90th Percentile
Grain Products and Pastas							
Frozen Grain-Based Meals	1.8	11	na	6.2	364	183	360
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)	27.5	170	465	58.5	3,706	290	612
Grain-Based Patties	0	0	0	0	0	0	0
Gravies and Sauces							
White Sauces and Milk Gravies	0.3	2	na	3.6	203	55	97
Hard Candy							
Hard Candy	<0.1	<1	na	5.8	436	1	1
Foods for Infants and Young Children 1 through 3 Years of Age							
Infant Formulas	0.2	1*	na	0.2	22	554*	1,256*
Cereal, Baby Food	<0.1	<1*	na	0.2	23	59*	101*
Milk Desserts, Baby Food	0	0	0	0	0	0	0
Fruits and Fruit Mixtures, Baby Food	<0.1	<1*	na	0.2	20	8*	17*
Fruit Juices, Baby Food	<0.1	<1*	na	<0.1	5	16*	23*
Fruit Desserts and Fruit-Flavored Puddings, Baby Food	<0.1	<1*	na	0.1	14	14*	30*
Vegetable and Vegetable Mixtures, Baby Food	<0.1	<1*	na	0.1	17	18*	29*
Cookies, Bars, and Nonsweet Crackers, Baby foods	<0.1	<1*	na	0.1	20	61*	141*
Grain Mixtures, Baby Food	<0.1	<1*	na	<0.1	4	71*	158*
Milk Products							
Flavored Milk and Milk Drinks	0.9	5	na	8.6	565	63	180
Milk-Based Meal Replacements	0.5	3	na	5.1	244	63	132
Snack Dips	0.9	6	na	3.4	170	166	415
Plant Protein Products							
Meat Analogs	0.1	1	na	1.7	93	37	76
Soups and Soup Mixes							
Grain Based Soups	0.8	5	na	6.7	516	71	162
Soft Candy							
Candies and Chocolate	3.0	19	63	30.3	1,789	62	158
Snack Foods							
Grain-Based Salty Snacks	6.2	38	116	35.9	2,140	106	231

bw = body weight; n = sample size; na = not available; NHANES = National Health and Nutrition Examination Surveys; U.S. = United States.
* Indicates an intake estimate that may not be statistically reliable, as the sample size does not meet the minimum reporting requirements (mean n<30; 90th percentile n<80).

Appendix C
Representative Food Codes for Proposed Food Uses of OPO-Fat in the U.S. (2017-2018 NHANES Data)

Representative Food Codes for Proposed Food Uses of OPO-Fat in the U.S. (2017-2018 NHANES Data)

Infant Formula - Replacement of 70% Total Fat by OPO-Fat

Food Code	Main food description	Total Fat (g/100 g)	OPO-Fat Use Level (g/100g)
11710000	Infant formula, NFS	3.56	2.49
11710050	Infant formula, NS as to form (Similac Expert Care Alimentum)	3.63	2.54
11710051	Infant formula, ready-to-feed (Similac Expert Care Alimentum)	3.63	2.54
11710053	Infant formula, powder, made with water, NFS (Similac Expert Care Alimentum)	3.63	2.54
11710054	Infant formula, powder, made with tap water (Similac Expert Care Alimentum)	3.63	2.54
11710055	Infant formula, powder, made with plain bottled water (Similac Expert Care Alimentum)	3.63	2.54
11710056	Infant formula, powder, made with baby water (Similac Expert Care Alimentum)	3.63	2.54
11710350	Infant formula, NS as to form (Similac Advance)	3.62	2.53
11710351	Infant formula, ready-to-feed (Similac Advance)	3.62	2.53
11710352	Infant formula, liquid concentrate, made with water, NFS (Similac Advance)	3.62	2.53
11710353	Infant formula, powder, made with water, NFS (Similac Advance)	3.62	2.53
11710354	Infant formula, liquid concentrate, made with tap water (Similac Advance)	3.62	2.53
11710355	Infant formula, liquid concentrate, made with plain bottled water (Similac Advance)	3.62	2.53
11710356	Infant formula, liquid concentrate, made with baby water (Similac Advance)	3.62	2.53
11710357	Infant formula, powder, made with tap water (Similac Advance)	3.62	2.53
11710358	Infant formula, powder, made with plain bottled water (Similac Advance)	3.62	2.53
11710359	Infant formula, powder, made with baby water (Similac Advance)	3.62	2.53
11710360	Infant formula, NS as to form (Similac Advance Organic)	3.62	2.53
11710361	Infant formula, ready-to-feed (Similac Advance Organic)	3.62	2.53
11710363	Infant formula, powder, made with water, NFS (Similac Advance Organic)	3.62	2.53
11710367	Infant formula, powder, made with tap water (Similac Advance Organic)	3.62	2.53
11710368	Infant formula, powder, made with plain bottled water (Similac Advance Organic)	3.62	2.53
11710369	Infant formula, powder, made with baby water (Similac Advance Organic)	3.62	2.53

Food Code	Main food description	Total Fat (g/100 g)	OPO-Fat Use Level (g/100g)
11710370	Infant formula, NS as to form (Similac Sensitive)	3.53	2.47
11710371	Infant formula, ready-to-feed (Similac Sensitive)	3.53	2.47
11710372	Infant formula, liquid concentrate, made with water, NFS (Similac Sensitive)	3.53	2.47
11710373	Infant formula, powder, made with water, NFS (Similac Sensitive)	3.53	2.47
11710374	Infant formula, liquid concentrate, made with tap water (Similac Sensitive)	3.53	2.47
11710375	Infant formula, liquid concentrate, made with plain bottled water (Similac Sensitive)	3.53	2.47
11710376	Infant formula, liquid concentrate, made with baby water (Similac Sensitive)	3.53	2.47
11710377	Infant formula, powder, made with tap water (Similac Sensitive)	3.53	2.47
11710378	Infant formula, powder, made with plain bottled water (Similac Sensitive)	3.53	2.47
11710379	Infant formula, powder, made with baby water (Similac Sensitive)	3.53	2.47
11710380	Infant formula, NS as to form (Similac for Spit-Up)	3.48	2.44
11710381	Infant formula, ready-to-feed (Similac for Spit-Up)	3.48	2.44
11710383	Infant formula, powder, made with water, NFS (Similac for Spit-Up)	3.48	2.44
11710470	Infant formula, NS as to form (Similac Expert Care NeoSure)	3.95	2.77
11710471	Infant formula, ready-to-feed (Similac Expert Care NeoSure)	3.95	2.77
11710473	Infant formula, powder, made with water, NFS (Similac Expert Care NeoSure)	3.95	2.77
11710477	Infant formula, powder, made with tap water (Similac Expert Care NeoSure)	3.95	2.77
11710478	Infant formula, powder, made with plain bottled water (Similac Expert Care NeoSure)	3.95	2.77
11710479	Infant formula, powder, made with baby water (Similac Expert Care NeoSure)	3.95	2.77
11710480	Infant formula, NS as to form (Similac Go and Grow)	3.56	2.49
11710481	Infant formula, powder, made with water, NFS (Similac Go and Grow)	3.56	2.49
11710620	Infant formula, NS as to form (Enfamil Newborn)	3.48	2.44
11710621	Infant formula, ready-to-feed (Enfamil Newborn)	3.48	2.44
11710626	Infant formula, powder, made with water, NFS (Enfamil Newborn)	3.48	2.44
11710627	Infant formula, powder, made with tap water (Enfamil Newborn)	3.48	2.44
11710628	Infant formula, powder, made with plain bottled water (Enfamil Newborn)	3.48	2.44
11710629	Infant formula, powder, made with baby water (Enfamil Newborn)	3.48	2.44
11710630	Infant formula, NS as to form (Enfamil Infant)	3.49	2.44

Food Code	Main food description	Total Fat (g/100 g)	OPO-Fat Use Level (g/100g)
11710631	Infant formula, ready-to-feed (Enfamil Infant)	3.49	2.44
11710632	Infant formula, liquid concentrate, made with water, NFS (Enfamil Infant)	3.49	2.44
11710633	Infant formula, liquid concentrate, made with tap water (Enfamil Infant)	3.49	2.44
11710634	Infant formula, liquid concentrate, made with plain bottled water (Enfamil Infant)	3.49	2.44
11710635	Infant formula, liquid concentrate, made with baby water (Enfamil Infant)	3.49	2.44
11710636	Infant formula, powder, made with water, NFS (Enfamil Infant)	3.49	2.44
11710637	Infant formula, powder, made with tap water (Enfamil Infant)	3.49	2.44
11710638	Infant formula, powder, made with plain bottled water (Enfamil Infant)	3.49	2.44
11710639	Infant formula, powder, made with baby water (Enfamil Infant)	3.49	2.44
11710660	Infant formula, NS as to form (Enfamil A.R.)	3.24	2.27
11710661	Infant formula, ready-to-feed (Enfamil A.R.)	3.24	2.27
11710663	Infant formula, powder, made with water, NFS (Enfamil A.R.)	3.24	2.27
11710664	Infant formula, powder, made with tap water (Enfamil A.R.)	3.24	2.27
11710665	Infant formula, NS as to form (Enfamil EnfaCare)	3.8	2.66
11710666	Infant formula, ready-to-feed (Enfamil EnfaCare)	3.8	2.66
11710667	Infant formula, powder, made with water, NFS (Enfamil EnfaCare)	3.8	2.66
11710668	Infant formula, powder, made with plain bottled water (Enfamil A.R.)	3.24	2.27
11710669	Infant formula, powder, made with baby water (Enfamil A.R.)	3.24	2.27
11710670	Infant formula, NS as to form (Enfamil Gentlease)	3.49	2.44
11710671	Infant formula, ready-to-feed (Enfamil Gentlease)	3.49	2.44
11710673	Infant formula, powder, made with water, NFS (Enfamil Gentlease)	3.49	2.44
11710674	Infant formula, powder, made with tap water (Enfamil EnfaCare)	3.8	2.66
11710675	Infant formula, powder, made with plain bottled water (Enfamil EnfaCare)	3.8	2.66
11710676	Infant formula, powder, made with baby water (Enfamil EnfaCare)	3.8	2.66
11710677	Infant formula, powder, made with tap water (Enfamil Gentlease)	3.49	2.44
11710678	Infant formula, powder, made with plain bottled water (Enfamil Gentlease)	3.49	2.44
11710679	Infant formula, powder, made with baby water (Enfamil Gentlease)	3.49	2.44
11710680	Infant formula, NS as to form (Enfamil Enfagrow Toddler Transitions)	3.55	2.49

Food Code	Main food description	Total Fat (g/100 g)	OPO-Fat Use Level (g/100g)
11710681	Infant formula, ready-to-feed (Enfamil Enfragrow Toddler Transitions)	3.55	2.49
11710683	Infant formula, powder, made with water, NFS (Enfamil Enfragrow Toddler Transitions)	6.27	4.39
11710687	Infant formula, powder, made with tap water (Enfamil Enfagrow Toddler Transitions)	3.55	2.49
11710688	Infant formula, powder, made with plain bottled water (Enfamil Enfagrow Toddler Transitions)	3.55	2.49
11710689	Infant formula, powder, made with baby water (Enfamil Enfagrow Toddler Transitions)	3.55	2.49
11710690	Infant formula, NS as to form (Enfamil Enfagrow Toddler Transitions Gentlease)	3.43	2.40
11710693	Infant formula, powder, made with water, NFS (Enfamil Enfagrow Toddler Transitions Gentlease)	3.43	2.40
11710697	Infant formula, powder, made with tap water (Enfamil Enfagrow Toddler Transitions Gentlease)	3.43	2.40
11710698	Infant formula, powder, made with plain bottled water (Enfamil Enfagrow Toddler Transitions Gentlease)	3.43	2.40
11710699	Infant formula, powder, made with baby water (Enfamil Enfagrow Toddler Transitions Gentlease)	3.43	2.40
11710800	Infant formula, NS as to form (PediaSure)	4.77	3.34
11710801	Infant formula, ready-to-feed (PediaSure)	4.77	3.34
11710805	Infant formula, with fiber, NS as to form (PediaSure Fiber)	4.7	3.29
11710806	Infant formula, with fiber, ready-to-feed (PediaSure Fiber)	4.7	3.29
11710910	Infant formula, NS as to form (Gerber Good Start Gentle)	3.41	2.39
11710911	Infant formula, ready-to-feed (Gerber Good Start Gentle)	3.41	2.39
11710912	Infant formula, liquid concentrate, made with water, NFS (Gerber Good Start Gentle)	3.41	2.39
11710913	Infant formula, powder, made with water, NFS (Gerber Good Start Gentle)	3.41	2.39
11710914	Infant formula, liquid concentrate, made with tap water (Gerber Good Start Gentle)	3.41	2.39
11710915	Infant formula, liquid concentrate, made with plain bottled water (Gerber Good Start Gentle)	3.41	2.39
11710916	Infant formula, liquid concentrate, made with baby water (Gerber Good Start Gentle)	3.41	2.39
11710917	Infant formula, powder, made with tap water (Gerber Good Start Gentle)	3.41	2.39
11710918	Infant formula, powder, made with plain bottled water (Gerber Good Start Gentle)	3.41	2.39
11710919	Infant formula, powder, made with baby water (Gerber Good Start Gentle)	3.41	2.39
11710920	Infant formula, NS as to form (Gerber Good Start Protect)	3.41	2.39

Food Code	Main food description	Total Fat (g/100 g)	OPO-Fat Use Level (g/100g)
11710923	Infant formula, powder, made with water, NFS (Gerber Good Start Protect)	3.41	2.39
11710927	Infant formula, powder, made with tap water (Gerber Good Start Protect)	3.41	2.39
11710928	Infant formula, powder, made with plain bottled water (Gerber Good Start Protect)	3.41	2.39
11710929	Infant formula, powder, made with baby water (Gerber Good Start Protect)	3.41	2.39
11710930	Infant formula, NS as to form (Gerber Graduates Gentle)	3.28	2.30
11710940	Infant formula, NS as to form (Gerber Graduates Protect)	3.28	2.30
11710960	Infant formula, NS as to form (Store Brand)	3.56	2.49
11710961	Infant formula, liquid concentrate, made with water, NFS (Store Brand)	3.56	2.49
11710962	Infant formula, powder, made with water, NFS (Store Brand)	3.56	2.49
11710963	Infant formula, ready-to-feed (Store Brand)	3.56	2.49
11710964	Infant formula, liquid concentrate, made with tap water (Store Brand)	3.56	2.49
11710965	Infant formula, liquid concentrate, made with plain bottled water (Store Brand)	3.56	2.49
11710966	Infant formula, liquid concentrate, made with baby water (Store Brand)	3.56	2.49
11710967	Infant formula, powder, made with tap water (Store Brand)	3.56	2.49
11710968	Infant formula, powder, made with plain bottled water (Store Brand)	3.56	2.49
11710969	Infant formula, powder, made with baby water (Store Brand)	3.56	2.49
11720310	Infant formula, NS as to form (Enfamil ProSobee)	3.49	2.44
11720311	Infant formula, ready-to-feed (Enfamil ProSobee)	3.49	2.44
11720312	Infant formula, liquid concentrate, made with water, NFS (Enfamil ProSobee)	3.49	2.44
11720313	Infant formula, powder, made with water, NFS (Enfamil ProSobee)	3.49	2.44
11720314	Infant formula, liquid concentrate, made with tap water (Enfamil ProSobee)	3.49	2.44
11720315	Infant formula, liquid concentrate, made with plain bottled water (Enfamil ProSobee)	3.49	2.44
11720316	Infant formula, liquid concentrate, made with baby water (Enfamil ProSobee)	3.49	2.44
11720317	Infant formula, powder, made with tap water (Enfamil ProSobee)	3.49	2.44
11720318	Infant formula, powder, made with plain bottled water (Enfamil ProSobee)	3.49	2.44
11720319	Infant formula, powder, made with baby water (Enfamil ProSobee)	3.49	2.44

Food Code	Main food description	Total Fat (g/100 g)	OPO-Fat Use Level (g/100g)
11720320	Infant formula, NS as to form (Enfamil Enfagrow Toddler Transitions Soy)	2.77	1.94
11720323	Infant formula, powder, made with water, NFS (Enfamil Enfagrow Toddler Transitions Soy)	2.77	1.94
11720410	Infant formula, NS as to form (Similac Isomil Soy)	3.53	2.47
11720411	Infant formula, ready-to-feed (Similac Isomil Soy)	3.53	2.47
11720412	Infant formula, liquid concentrate, made with water, NFS (Similac Isomil Soy)	3.53	2.47
11720413	Infant formula, powder, made with water, NFS (Similac Isomil Soy)	3.53	2.47
11720414	Infant formula, liquid concentrate, made with tap water (Similac Isomil Soy)	3.53	2.47
11720415	Infant formula, liquid concentrate, made with plain bottled water (Similac Isomil Soy)	3.53	2.47
11720416	Infant formula, liquid concentrate, made with baby water (Similac Isomil Soy)	3.53	2.47
11720417	Infant formula, powder, made with tap water (Similac Isomil Soy)	3.53	2.47
11720418	Infant formula, powder, made with plain bottled water (Similac Isomil Soy)	3.53	2.47
11720419	Infant formula, powder, made with baby water (Similac Isomil Soy)	3.53	2.47
11720430	Infant formula, NS as to form (Similac Expert Care for Diarrhea)	3.6	2.52
11720431	Infant formula, ready-to-feed (Similac Expert Care for Diarrhea)	3.6	2.52
11720610	Infant formula, NS as to form (Gerber Good Start Soy)	3.35	2.35
11720611	Infant formula, ready-to-feed (Gerber Good Start Soy)	3.35	2.35
11720612	Infant formula, liquid concentrate, made with water, NFS (Gerber Good Start Soy)	3.35	2.35
11720613	Infant formula, powder, made with water, NFS (Gerber Good Start Soy)	3.35	2.35
11720614	Infant formula, liquid concentrate, made with tap water (Gerber Good Start Soy)	3.35	2.35
11720615	Infant formula, liquid concentrate, made with plain bottled water (Gerber Good Start Soy)	3.35	2.35
11720616	Infant formula, liquid concentrate, made with baby water (Gerber Good Start Soy)	3.35	2.35
11720617	Infant formula, powder, made with tap water (Gerber Good Start Soy)	3.35	2.35
11720618	Infant formula, powder, made with plain bottled water (Gerber Good Start Soy)	3.35	2.35
11720619	Infant formula, powder, made with baby water (Gerber Good Start Soy)	3.35	2.35
11720620	Infant formula, NS as to form (Gerber Graduates Soy)	3.28	2.30
11720800	Infant formula, NS as to form (Store Brand Soy)	3.51	2.46
11720801	Infant formula, ready-to-feed (Store brand Soy)	3.51	2.46

Food Code	Main food description	Total Fat (g/100 g)	OPO-Fat Use Level (g/100g)
11720802	Infant formula, liquid concentrate, made with water, NFS (Store Brand Soy)	3.51	2.46
11720803	Infant formula, powder, made with water, NFS (Store Brand Soy)	3.51	2.46
11720807	Infant formula, powder, made with tap water (Store Brand Soy)	3.51	2.46
11720808	Infant formula, powder, made with plain bottled water (Store Brand Soy)	3.51	2.46
11720809	Infant formula, powder, made with baby water (Store Brand Soy)	3.51	2.46
11740310	Infant formula, NS as to form (Enfamil Nutramigen)	3.36	2.35
11740311	Infant formula, ready-to-feed (Enfamil Nutramigen)	3.36	2.35
11740312	Infant formula, liquid concentrate, made with water, NFS (Enfamil Nutramigen)	3.36	2.35
11740313	Infant formula, powder, made with water, NFS (Enfamil Nutramigen)	3.36	2.35
11740320	Infant formula, NS as to form (PurAmino)	3.36	2.35
11740323	Infant formula, powder, made with water, NFS (PurAmino)	3.36	2.35
11740400	Infant formula, NS as to form (Enfamil Pregestimil)	3.62	2.53
11740401	Infant formula, ready-to-feed (Enfamil Pregestimil)	3.62	2.53
11740403	Infant formula, powder, made with water, NFS (Enfamil Pregestimil)	3.62	2.53
11740511	Infant formula, ready-to-feed, low iron (Enfamil Premature 20 Cal)	3.34	2.34
11740521	Infant formula, ready-to-feed, with iron (Enfamil Premature 20 Cal)	3.34	2.34

Processed Foods – Replacement of 100% Total Fat by OPO-Fat

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
Baked Goods and Baking Mixes			
Cakes			
51165000	Coffee cake, yeast type	16.40	16.40
53100050	Cake batter, raw, chocolate	13.66	13.66
53100070	Cake batter, raw, not chocolate	11.33	11.33
53100100	Cake or cupcake, NS as to type	20.05	20.05
53101100	Cake, angel food, without icing or filling	0.30	0.30
53101200	Cake, angel food, with icing or filling	6.91	6.91
53101250	Cake, angel food, with fruit and icing or filling	3.03	3.03
53102100	Cake or cupcake, applesauce, without icing or filling	24.68	24.68
53102200	Cake or cupcake, applesauce, with icing or filling	26.07	26.07

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53102600	Cake or cupcake, banana, without icing or filling	25.51	25.51
53102700	Cake or cupcake, banana, with icing or filling	26.63	26.63
53102800	Cake or cupcake, Black Forest	12.50	12.50
53103000	Cake, Boston cream pie	8.50	8.50
53104100	Cake or cupcake, carrot, without icing or filling	25.62	25.62
53104260	Cake or cupcake, carrot, with icing or filling	26.71	26.71
53104300	Cake, carrot, diet	11.14	11.14
53104400	Cake or cupcake, coconut, with icing or filling	10.30	10.30
53104500	Cheesecake	22.50	22.50
53104550	Cheesecake with fruit	13.92	13.92
53104600	Cheesecake, chocolate	25.82	25.82
53105270	Cake or cupcake, chocolate, devil's food or fudge, with icing or filling	20.05	20.05
53105275	Cake or cupcake, chocolate, devil's food or fudge, without icing or filling	15.35	15.35
53105300	Cake or cupcake, German chocolate, with icing or filling	21.92	21.92
53105500	Cake, chocolate, with icing, diet	13.00	13.00
53106500	Cake, cream, without icing or topping	18.93	18.93
53108200	Snack cake, chocolate, with icing or filling	15.93	15.93
53108220	Snack cake, chocolate, with icing or filling, reduced fat and calories	13.00	13.00
53109200	Snack cake, not chocolate, with icing or filling	11.54	11.54
53109220	Snack cake, not chocolate, with icing or filling, reduced fat and calories	11.14	11.14
53109300	Cake, Dobos Torte	18.01	18.01
53110000	Cake, fruit cake, light or dark, holiday type cake	9.10	9.10
53111000	Cake or cupcake, gingerbread	10.15	10.15
53112100	Ice cream cake	14.46	14.46
53113000	Cake, jelly roll	14.10	14.10
53114000	Cake or cupcake, lemon, without icing or filling	16.29	16.29
53114100	Cake or cupcake, lemon, with icing or filling	17.49	17.49
53115100	Cake or cupcake, marble, without icing or filling	15.82	15.82
53115200	Cake or cupcake, marble, with icing or filling	18.98	18.98
53115310	Cake or cupcake, nut, without icing or filling	24.90	24.90
53115320	Cake or cupcake, nut, with icing or filling	20.32	20.32
53115410	Cake or cupcake, oatmeal	12.66	12.66
53115450	Cake or cupcake, peanut butter	21.18	21.18
53116000	Cake, pound, without icing or filling	13.96	13.96
53116020	Cake, pound, with icing or filling	15.82	15.82
53116270	Cake, pound, chocolate	18.29	18.29
53116350	Cake, pound, Puerto Rican style	29.10	29.10

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53116390	Cake, pound, reduced fat, cholesterol free	1.20	1.20
53116500	Cake or cupcake, pumpkin, without icing or filling	24.00	24.00
53116510	Cake or cupcake, pumpkin, with icing or filling	25.59	25.59
53116550	Cake or cupcake, raisin-nut	21.29	21.29
53116570	Cake, Ravani	7.56	7.56
53116600	Cake, rice flour, without icing or filling	8.00	8.00
53116650	Cake, Quezadilla, El Salvadorian style	11.58	11.58
53117100	Cake or cupcake, spice, without icing or filling	24.68	24.68
53117200	Cake or cupcake, spice, with icing or filling	26.07	26.07
53118100	Cake, sponge, without icing or filling	2.70	2.70
53118200	Cake, sponge, with icing or filling	8.21	8.21
53118300	Cake, sponge, chocolate	8.75	8.75
53118410	Rum cake, without icing	13.96	13.96
53118500	Cake, torte	13.72	13.72
53118550	Cake, tres leche	8.73	8.73
53119000	Cake, pineapple, upside down	16.52	16.52
53120270	Cake or cupcake, white, with icing or filling	17.91	17.91
53120275	Cake or cupcake, white, without icing or filling	13.15	13.15
53121270	Cake or cupcake, yellow, with icing or filling	17.75	17.75
53121275	Cake or cupcake, yellow, without icing or filling	16.29	16.29
53122070	Cake, shortcake, biscuit type, with whipped cream and fruit	10.35	10.35
53122080	Cake, shortcake, biscuit type, with fruit	8.64	8.64
53123070	Cake, shortcake, sponge type, with whipped cream and fruit	4.25	4.25
53123080	Cake, shortcake, sponge type, with fruit	2.22	2.22
53123500	Cake, shortcake, with whipped topping and fruit, diet	4.75	4.75
53124110	Cake or cupcake, zucchini	27.50	27.50
53441210	Basbousa	8.46	8.46
53610100	Coffee cake, crumb or quick-bread type	17.67	17.67
53610170	Coffee cake, crumb or quick-bread type, with fruit	11.31	11.31
53610200	Coffee cake, crumb or quick-bread type, cheese-filled	16.90	16.90
91550100	Coconut cream cake, Puerto Rican style	14.79	14.79
Cookies			
51187020	Anisette toast	9.70	9.70
53200100	Cookie, batter or dough, raw	22.24	22.24
53201000	Cookie, NFS	24.72	24.72
53202000	Cookie, almond	26.22	26.22
53203000	Cookie, applesauce	18.10	18.10
53203500	Cookie, biscotti	8.09	8.09
53204000	Cookie, brownie, NS as to icing	16.30	16.30
53204010	Cookie, brownie, without icing	16.30	16.30

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53204100	Cookie, brownie, with icing or filling	16.95	16.95
53204840	Cookie, brownie, reduced fat, NS as to icing	9.68	9.68
53204860	Cookie, brownie, fat free, NS as to icing	9.68	9.68
53205250	Cookie, butterscotch, brownie	16.30	16.30
53205260	Cookie, bar, with chocolate	24.72	24.72
53206000	Cookie, chocolate chip	24.72	24.72
53206030	Cookie, chocolate chip, reduced fat	17.91	17.91
53206100	Cookie, chocolate chip sandwich	17.65	17.65
53206500	Cookie, chocolate, made with rice cereal	19.35	19.35
53206550	Cookie, chocolate, made with oatmeal and coconut, no bake	18.10	18.10
53207000	Cookie, chocolate or fudge	14.20	14.20
53207020	Cookie, chocolate or fudge, reduced fat	17.91	17.91
53207050	Cookie, chocolate, with chocolate filling or coating, fat free	17.91	17.91
53208000	Cookie, marshmallow, chocolate-covered	16.90	16.90
53208200	Cookie, marshmallow pie, chocolate covered	16.90	16.90
53209005	Cookie, chocolate, with icing or coating	24.20	24.20
53209010	Cookie, sugar wafer, chocolate-covered	27.59	27.59
53209015	Cookie, chocolate sandwich	19.14	19.14
53209020	Cookie, chocolate sandwich, reduced fat	13.24	13.24
53209100	Cookie, chocolate, sandwich, with extra filling	24.52	24.52
53209500	Cookie, chocolate and vanilla sandwich	19.14	19.14
53210000	Cookie, chocolate wafer	14.20	14.20
53210900	Cookie, graham cracker with chocolate and marshmallow	18.57	18.57
53211000	Cookie bar, with chocolate, nuts, and graham crackers	24.72	24.72
53215500	Cookie, coconut	22.55	22.55
53220000	Cookie, fruit-filled bar	7.30	7.30
53220010	Cookie, fruit-filled bar, fat free	7.30	7.30
53220030	Cookie, fig bar	7.30	7.30
53220040	Cookie, fig bar, fat free	7.30	7.30
53222010	Cookie, fortune	2.70	2.70
53222020	Cookie, cone shell, ice cream type, wafer or cake	6.90	6.90
53223000	Cookie, gingersnaps	9.80	9.80
53223100	Cookie, granola	17.60	17.60
53224000	Cookie, ladyfinger	9.10	9.10
53224250	Cookie, lemon bar	18.73	18.73
53225000	Cookie, macaroon	22.55	22.55
53226000	Cookie, marshmallow, with coconut	16.90	16.90
53226500	Cookie, marshmallow, with rice cereal, no bake	9.00	9.00
53226550	Cookie, marshmallow, with rice cereal and chocolate chips	18.18	18.18

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53226600	Cookie, marshmallow and peanut butter, with oat cereal, no bake	9.00	9.00
53228000	Cookie, meringue	0.34	0.34
53230000	Cookie, molasses	12.80	12.80
53231000	Cookie, Lebkuchen	12.80	12.80
53231400	Cookie, multigrain, high fiber	17.60	17.60
53233000	Cookie, oatmeal	18.10	18.10
53233010	Cookie, oatmeal, with raisins	18.10	18.10
53233040	Cookie, oatmeal, reduced fat, NS as to raisins	10.04	10.04
53233050	Cookie, oatmeal sandwich, with creme filling	18.29	18.29
53233060	Cookie, oatmeal, with chocolate chips	20.92	20.92
53233080	Cookie, oatmeal sandwich, with peanut butter and jelly filling	18.29	18.29
53233100	Cookie, oatmeal, with chocolate and peanut butter, no bake	18.10	18.10
53234000	Cookie, peanut butter	23.82	23.82
53234100	Cookie, peanut butter, with chocolate	25.29	25.29
53234250	Cookie, peanut butter with rice cereal, no bake	9.00	9.00
53235000	Cookie, peanut butter sandwich	21.10	21.10
53235500	Cookie, with peanut butter filling, chocolate-coated	35.30	35.30
53235600	Cookie, Pfeffernusse	26.22	26.22
53236000	Cookie, Pizzelle	6.90	6.90
53236100	Cookie, pumpkin	18.10	18.10
53237000	Cookie, raisin	13.60	13.60
53237010	Cookie, raisin sandwich, cream-filled	18.29	18.29
53237500	Cookie, rum ball, no bake	26.22	26.22
53238000	Cookie, sandwich-type, not chocolate or vanilla	20.00	20.00
53239000	Cookie, shortbread	26.22	26.22
53239010	Cookie, shortbread, reduced fat	14.00	14.00
53239050	Cookie, shortbread, with icing or filling	28.31	28.31
53239100	Pocky	22.50	22.50
53240000	Cookie, animal	13.80	13.80
53240010	Cookie, animal, with frosting or icing	24.10	24.10
53241500	Cookie, butter or sugar	19.55	19.55
53241510	Marie biscuit	10.58	10.58
53241600	Cookie, butter or sugar, with fruit and/or nuts	20.71	20.71
53242000	Cookie, sugar wafer	23.24	23.24
53242500	Cookie, toffee bar	24.72	24.72
53243000	Cookie, vanilla sandwich	20.00	20.00
53243010	Cookie, vanilla sandwich, extra filling	24.52	24.52
53243050	Cookie, vanilla sandwich, reduced fat	10.42	10.42
53244010	Cookie, butter or sugar, with chocolate icing or filling	23.50	23.50

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53244020	Cookie, butter or sugar, with icing or filling other than chocolate	14.93	14.93
53246000	Cookie, tea, Japanese	2.70	2.70
53247000	Cookie, vanilla wafer	16.41	16.41
53247050	Cookie, vanilla wafer, reduced fat	15.20	15.20
53247500	Cookie, vanilla with caramel, coconut, and chocolate coating	25.80	25.80
53251100	Cookie, rugelach	7.30	7.30
53260030	Cookie, chocolate chip, sugar free	16.80	16.80
53260200	Cookie, oatmeal, sugar free	18.00	18.00
53260300	Cookie, sandwich, sugar free	22.10	22.10
53260400	Cookie, sugar or plain, sugar free	31.03	31.03
53260500	Cookie, sugar wafer, sugar free	28.57	28.57
53260600	Cookie, peanut butter, sugar free	31.03	31.03
53261000	Cookie, gluten free	17.89	17.89
53270100	Cookies, Puerto Rican style	22.91	22.91
54102010	Graham crackers	10.60	10.60
54102015	Graham crackers (Teddy Grahams)	10.60	10.60
54102020	Graham crackers, chocolate covered	25.80	25.80
54102060	Crackers, Cuban	12.80	12.80
54102100	Graham crackers, reduced fat	5.71	5.71
54102200	Graham crackers, sandwich, with filling	20.00	20.00
54103000	Crackers, breakfast biscuit	15.07	15.07
Grain-Based Crackers			
51184000	Breadsticks, hard, NFS	9.50	9.50
51184100	Breadsticks, hard, reduced sodium	10.63	10.63
51185000	Croutons	18.30	18.30
51187000	Melba toast	3.20	3.20
51188500	Zwieback toast	9.70	9.70
51306000	Breadsticks, hard, whole wheat	10.88	10.88
51808050	Breadsticks, hard, gluten free	15.84	15.84
54001000	Crackers, NFS	26.43	26.43
54102050	Crackers, oatmeal	16.40	16.40
54200100	Crackers, butter, reduced sodium	17.20	17.20
54201010	Crackers, matzo, reduced sodium	1.40	1.40
54202020	Crackers, saltine, reduced sodium	8.75	8.75
54204020	Crackers, wheat, reduced sodium	17.20	17.20
54204030	Crackers, woven wheat, reduced sodium	17.20	17.20
54301010	Crackers, butter, plain	26.43	26.43
54301020	Crackers, butter, flavored	26.43	26.43
54301030	Crackers, butter (Ritz)	26.43	26.43
54301100	Crackers, butter, reduced fat	13.37	13.37

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
54304000	Crackers, cheese	22.74	22.74
54304005	Crackers, cheese (Cheez-It)	22.74	22.74
54304020	Crackers, cheese (Goldfish)	22.74	22.74
54304100	Crackers, cheese, reduced fat	11.67	11.67
54304110	Crackers, cheese, reduced sodium	25.30	25.30
54304150	Crackers, cheese, whole grain	16.03	16.03
54305010	Crackers, crispbread	1.30	1.30
54305020	Crackers, flatbread	8.25	8.25
54307000	Crackers, matzo	1.40	1.40
54308000	Crackers, milk	13.77	13.77
54313000	Crackers, oyster	8.64	8.64
54318500	Rice cake	4.30	4.30
54319000	Crackers, rice	5.00	5.00
54319005	Crackers, rice and nuts	8.85	8.85
54319020	Popcorn cake	3.10	3.10
54319500	Rice paper	1.21	1.21
54325000	Crackers, saltine	8.64	8.64
54325010	Crackers, saltine, reduced fat	1.60	1.60
54325060	Crackers, saltine, multigrain	10.71	10.71
54326000	Crackers, multigrain	20.40	20.40
54328000	Crackers, sandwich	24.54	24.54
54328100	Crackers, sandwich, peanut butter filled	24.54	24.54
54328105	Crackers, sandwich, peanut butter filled (Ritz)	25.00	25.00
54328110	Crackers, sandwich, reduced fat, peanut butter filled	16.67	16.67
54328120	Crackers, whole grain, sandwich, peanut butter filled	21.18	21.18
54328200	Crackers, sandwich, cheese filled	21.10	21.10
54328210	Crackers, sandwich, cheese filled (Ritz)	25.09	25.09
54336000	Crackers, water	7.14	7.14
54336100	Crackers, wonton	31.72	31.72
54337010	Crackers, woven wheat	15.26	15.26
54337020	Crackers, woven wheat, plain (Triscuit)	15.26	15.26
54337030	Crackers, woven wheat, flavored (Triscuit)	15.26	15.26
54337060	Crackers, woven wheat, reduced fat	7.59	7.59
54338000	Crackers, wheat	15.26	15.26
54338010	Crackers, wheat, plain (Wheat Thins)	15.26	15.26
54338020	Crackers, wheat, flavored (Wheat Thins)	15.26	15.26
54338100	Crackers, wheat, reduced fat	13.37	13.37
54339000	Crackers, corn	16.40	16.40
54340100	Crackers, gluten free, plain	15.84	15.84
54340110	Crackers, gluten free, flavored	15.84	15.84

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
French Toast, Pancakes, and Waffles			
53400200	Blintz, cheese-filled	7.65	7.65
53400300	Blintz, fruit-filled	6.23	6.23
53430000	Crepe, NS as to filling	6.95	6.95
53430100	Crepe, chocolate filled	6.37	6.37
53430200	Crepe, fruit filled	6.95	6.95
55100005	Pancakes, NFS	11.92	11.92
55100010	Pancakes, plain, from frozen	6.83	6.83
55100015	Pancakes, plain, reduced fat, from fozen	9.58	9.58
55100020	Pancakes, with fruit, from frozen	6.52	6.52
55100025	Pancakes, with chocolate, from frozen	7.97	7.97
55100030	Pancakes, whole grain, from frozen	6.75	6.75
55100035	Pancakes, whole grain, reduced fat, from frozen	6.75	6.75
55100040	Pancakes, gluten free, from frozen	4.55	4.55
55100050	Pancakes, plain, from fast food / restaurant	15.33	15.33
55100055	Pancakes, with fruit, from fast food / restaurant	12.16	12.16
55100060	Pancakes, with chocolate, from fast food / restaurant	18.55	18.55
55100065	Pancakes, whole grain, from fast food / restaurant	15.65	15.65
55100070	Pancakes, whole grain and nuts, from fast food / restaurant	23.01	23.01
55100080	Pancakes, from school, NFS	6.57	6.57
55101000	Pancakes, plain	11.92	11.92
55101015	Pancakes, plain, reduced fat	9.58	9.58
55103000	Pancakes, with fruit	9.42	9.42
55103020	Pancakes, pumpkin	9.95	9.95
55103100	Pancakes, with chocolate	15.81	15.81
55105000	Pancakes, buckwheat	12.69	12.69
55105100	Pancakes, cornmeal	5.91	5.91
55105200	Pancakes, whole grain	12.13	12.13
55105205	Pancakes, whole grain, reduced fat	9.73	9.73
55106000	Pancakes, gluten free	4.55	4.55
55200010	Waffle, NFS	9.49	9.49
55200020	Waffle, plain, from frozen	9.49	9.49
55200030	Waffle, plain, reduced fat, from frozen	6.92	6.92
55200040	Waffle, fruit, from frozen	9.05	9.05
55200050	Waffle, chocolate, from frozen	10.50	10.50
55200060	Waffle, whole grain, from frozen	8.39	8.39
55200070	Waffle, whole grain, reduced fat, from frozen	3.57	3.57
55200080	Waffle, whole grain, fruit, from frozen	8.02	8.02
55200090	Waffle, gluten free, from frozen	8.84	8.84
55200100	Waffle, plain, from fast food / restaurant	26.19	26.19

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
55200110	Waffle, chocolate, from fast food / restaurant	28.71	28.71
55200120	Waffle, fruit, from fast food / restaurant	20.95	20.95
55200130	Waffle, whole grain, from fast food / restaurant	26.77	26.77
55200200	Waffle, from school, NFS	3.57	3.57
55201000	Waffle, plain	18.64	18.64
55203000	Waffle, fruit	14.78	14.78
55203600	Waffle, chocolate	22.55	22.55
55203700	Waffle, cinnamon	18.60	18.60
55204000	Waffle, cornmeal	11.74	11.74
55205000	Waffle, whole grain	19.02	19.02
55208000	Waffle, gluten free	8.84	8.84
55211050	Waffle, plain, reduced fat	14.47	14.47
55212000	Waffle, whole grain, reduced fat	14.73	14.73
55300010	French toast, NFS	11.15	11.15
55300020	French toast, plain, from frozen	3.71	3.71
55300030	French toast, whole grain, from frozen	3.89	3.89
55300040	French toast, gluten free, from frozen	4.49	4.49
55300050	French toast, plain, from fast food / restaurant	14.09	14.09
55300055	French toast, whole grain, from fast food / restaurant	14.31	14.31
55300060	French toast, from school, NFS	3.71	3.71
55301000	French toast, plain	11.15	11.15
55301010	French toast, plain, reduced fat	6.37	6.37
55301015	French toast, whole grain	11.35	11.35
55301020	French toast, whole grain, reduced fat	6.57	6.57
55301025	French toast, gluten free	11.98	11.98
55301030	French toast sticks, NFS	9.12	9.12
55301031	French toast sticks, plain, from frozen	9.12	9.12
55301040	French toast sticks, plain, from fast food / restaurant	20.87	20.87
55301048	French toast sticks, from school, NFS	3.71	3.71
55301050	French toast sticks, plain	17.74	17.74
55301055	French toast sticks, whole grain	11.35	11.35
55310100	Fried bread, Puerto Rican style	8.27	8.27
55400010	Crepe, NFS	10.93	10.93
55401000	Crepe, plain	10.93	10.93
55501000	Chinese pancake	0.38	0.38
55702100	Dosa (Indian), plain	4.05	4.05
Pastries			
51160000	Roll, sweet, no frosting	7.37	7.37
51160100	Roll, sweet, cinnamon bun, no frosting	16.40	16.40
51160110	Roll, sweet, cinnamon bun, frosted	26.61	26.61

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
51161000	Pan Dulce, with fruit, no frosting	16.40	16.40
51161020	Roll, sweet, with fruit, frosted	16.37	16.37
51161030	Roll, sweet, with fruit, frosted, diet	26.61	26.61
51161050	Roll, sweet, frosted	20.06	20.06
51161250	Pan Dulce, no topping	11.58	11.58
51161270	Pan Dulce, with sugar topping	12.82	12.82
51161280	Pan Dulce, with raisins and icing	11.39	11.39
51166000	Croissant	21.00	21.00
51166100	Croissant, cheese	20.90	20.90
51166200	Croissant, chocolate	22.79	22.79
51166500	Croissant, fruit	19.72	19.72
51167000	Brioche	26.82	26.82
51188100	Pannetone	8.24	8.24
53410100	Cobbler, apple	4.95	4.95
53410200	Cobbler, apricot	4.43	4.43
53410300	Cobbler, berry	5.84	5.84
53410500	Cobbler, cherry	5.18	5.18
53410800	Cobbler, peach	4.75	4.75
53410850	Cobbler, pear	4.93	4.93
53410880	Cobbler, plum	4.78	4.78
53410900	Cobbler, rhubarb	6.68	6.68
53415100	Crisp, apple, apple dessert	3.54	3.54
53415120	Fritter, apple	24.46	24.46
53415200	Fritter, banana	21.34	21.34
53415220	Fritter, berry	21.95	21.95
53415300	Crisp, blueberry	10.14	10.14
53415400	Crisp, cherry	7.50	7.50
53415500	Crisp, peach	6.88	6.88
53420000	Cream puff, eclair, custard or cream filled, NS as to icing	24.36	24.36
53420100	Cream puff, eclair, custard or cream filled, not iced	21.35	21.35
53420200	Cream puff, eclair, custard or cream filled, iced	18.52	18.52
53420210	Cream puff, eclair, custard or cream filled, iced, reduced fat	7.14	7.14
53420250	Cream puff, no filling or icing	25.90	25.90
53420300	Air filled fritter or fried puff, without syrup, Puerto Rican style	23.75	23.75
53420310	Wheat flour fritter, without syrup	41.23	41.23
53420400	Sopaipilla, without syrup or honey	19.91	19.91
53420410	Sopaipilla with syrup or honey	16.06	16.06
53430700	Tamale, sweet	12.57	12.57
53430750	Tamale, sweet, with fruit	8.50	8.50
53440000	Strudel, apple	11.20	11.20

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53440300	Strudel, berry	6.27	6.27
53440500	Strudel, cherry	10.06	10.06
53440600	Strudel, cheese	11.69	11.69
53440700	Strudel, peach	5.22	5.22
53440800	Strudel, cheese and fruit	7.73	7.73
53441110	Baklava	27.23	27.23
53452100	Pastry, fruit-filled	19.36	19.36
53452120	Pastry, made with bean or lotus seed paste filling, baked	4.21	4.21
53452130	Pastry, made with bean paste and salted egg yolk filling, baked	8.03	8.03
53452150	Pastry, Chinese, made with rice flour	6.04	6.04
53452170	Pastry, cookie type, fried	25.24	25.24
53452200	Pastry, Italian, with cheese	10.81	10.81
53452400	Pastry, puff	38.50	38.50
53452420	Pastry, puff, custard or cream filled, iced or not iced	29.78	29.78
53452450	Cheese pastry puffs	19.36	19.36
53452500	Pastry, mainly flour and water, fried	18.11	18.11
53500100	Breakfast pastry, NFS	18.50	18.50
53510000	Danish pastry, plain or spice	22.40	22.40
53510100	Danish pastry, with fruit	18.50	18.50
53511000	Danish pastry, with cheese	21.90	21.90
53520000	Doughnut, NFS	22.86	22.86
53520100	Doughnut, cake type, plain	24.93	24.93
53520120	Doughnut, chocolate	22.44	22.44
53520130	Doughnut, cake type, powdered sugar	23.01	23.01
53520135	Doughnut, cake type, with icing	23.19	23.19
53520140	Doughnut, cake type, chocolate icing	23.46	23.46
53520160	Doughnut, chocolate, with chocolate icing	22.72	22.72
53520170	Doughnut holes	22.86	22.86
53520200	Churros	22.21	22.21
53520510	Beignet	20.18	20.18
53521110	Doughnut, yeast type	22.70	22.70
53521130	Doughnut, yeast type, with chocolate icing	21.68	21.68
53521140	Doughnut, jelly	18.16	18.16
53521210	Doughnut, custard-filled	18.92	18.92
53521230	Doughnut, custard-filled, with icing	18.70	18.70
53530000	Breakfast tart	9.02	9.02
53530010	Breakfast tart, lowfat	5.99	5.99
55801000	Funnel cake with sugar	16.23	16.23
55801010	Funnel cake with sugar and fruit	15.45	15.45
58123120	Sweet bread dough, filled with bean paste, meatless, steamed	2.79	2.79

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58124210	Pastry, cheese-filled	19.82	19.82
58124220	Pastry, egg and cheese filled	15.19	15.19
58124230	Pastry, meat / poultry-filled	18.86	18.86
58124500	Pastry, filled with potatoes and peas, fried	18.16	18.16
58127110	Vegetables in pastry	22.94	22.94
58127150	Vegetables and cheese in pastry	23.83	23.83
Pies			
53300100	Pie, NFS	11.00	11.00
53300170	Pie, individual size or tart, NFS	16.10	16.10
53300180	Pie, fried, NFS	16.10	16.10
53301000	Pie, apple, two crust	11.00	11.00
53301070	Pie, apple, individual size or tart	16.10	16.10
53301080	Pie, apple, fried pie	16.10	16.10
53301500	Pie, apple, one crust	9.33	9.33
53302000	Pie, apricot, two crust	12.57	12.57
53302070	Pie, apricot, individual size or tart	16.10	16.10
53302080	Pie, apricot, fried pie	16.10	16.10
53303000	Pie, blackberry, two crust	12.36	12.36
53303070	Pie, blackberry, individual size or tart	14.00	14.00
53303500	Pie, berry, not blackberry, blueberry, boysenberry, huckleberry, raspberry, or strawberry; two crust	13.83	13.83
53303510	Pie, berry, not blackberry, blueberry, boysenberry, huckleberry, raspberry, or strawberry; one crust	10.37	10.37
53303570	Pie, berry, not blackberry, blueberry, boysenberry, huckleberry, raspberry, or strawberry, individual size or tart	15.56	15.56
53304000	Pie, blueberry, two crust	10.00	10.00
53304070	Pie, blueberry, individual size or tart	13.92	13.92
53305000	Pie, cherry, two crust	11.00	11.00
53305010	Pie, cherry, one crust	8.62	8.62
53305070	Pie, cherry, individual size or tart	11.00	11.00
53305080	Pie, cherry, fried pie	16.10	16.10
53305700	Pie, lemon, not cream or meringue	15.61	15.61
53305720	Pie, lemon, not cream or meringue, individual size or tart	16.85	16.85
53305750	Pie, lemon, fried pie	16.10	16.10
53306000	Pie, mince, two crust	10.80	10.80
53307000	Pie, peach, two crust	10.00	10.00
53307050	Pie, peach, one crust	8.34	8.34
53307070	Pie, peach, individual size or tart	14.25	14.25
53307080	Pie, peach, fried pie	16.10	16.10
53307500	Pie, pear, two crust	12.16	12.16
53307570	Pie, pear, individual size or tart	14.12	14.12

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53308000	Pie, pineapple, two crust	12.10	12.10
53308070	Pie, pineapple, individual size or tart	16.10	16.10
53309000	Pie, raisin, two crust	10.96	10.96
53309070	Pie, raisin, individual size or tart	13.53	13.53
53310000	Pie, raspberry, one crust	8.81	8.81
53310050	Pie, raspberry, two crust	12.43	12.43
53311000	Pie, rhubarb, two crust	15.41	15.41
53312000	Pie, strawberry, one crust	9.63	9.63
53313000	Pie, strawberry-rhubarb, two crust	14.36	14.36
53314000	Pie, strawberry, individual size or tart	12.54	12.54
53340000	Pie, apple-sour cream	9.28	9.28
53340500	Pie, cherry, made with cream cheese and sour cream	13.09	13.09
53341000	Pie, banana cream	13.60	13.60
53341070	Pie, banana cream, individual size or tart	10.83	10.83
53341500	Pie, buttermilk	18.25	18.25
53341750	Pie, chess	20.11	20.11
53342000	Pie, chocolate cream	22.41	22.41
53342070	Pie, chocolate cream, individual size or tart	13.93	13.93
53343000	Pie, coconut cream	16.60	16.60
53343070	Pie, coconut cream, individual size or tart	11.39	11.39
53344000	Pie, custard	11.60	11.60
53344070	Pie, custard, individual size or tart	4.75	4.75
53344200	Mixed fruit tart filled with custard or cream cheese	8.72	8.72
53344300	Dessert pizza	7.56	7.56
53345000	Pie, lemon cream	10.95	10.95
53345070	Pie, lemon cream, individual size or tart	12.59	12.59
53346000	Pie, peanut butter cream	14.61	14.61
53346500	Pie, pineapple cream	7.68	7.68
53347000	Pie, pumpkin	9.75	9.75
53347070	Pie, pumpkin, individual size or tart	9.75	9.75
53347500	Pie, sour cream, raisin	22.63	22.63
53347600	Pie, squash	8.01	8.01
53348000	Pie, strawberry cream	10.76	10.76
53348070	Pie, strawberry cream, individual size or tart	13.35	13.35
53360000	Pie, sweet potato	15.08	15.08
53365000	Pie, vanilla cream	14.40	14.40
53370000	Pie, chiffon, not chocolate	11.83	11.83
53371000	Pie, chiffon, chocolate	15.07	15.07
53373000	Pie, black bottom	15.56	15.56
53381000	Pie, lemon meringue	8.70	8.70

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53381070	Pie, lemon meringue, individual size or tart	8.70	8.70
53382000	Pie, chocolate-marshmallow	20.65	20.65
53385000	Pie, pecan	16.69	16.69
53385070	Pie, pecan, individual size or tart	16.69	16.69
53385500	Pie, oatmeal	15.82	15.82
53386000	Pie, pudding, flavors other than chocolate	11.75	11.75
53387000	Pie, Toll house chocolate chip	39.25	39.25
53390000	Pie, shoo-fly	11.10	11.10
53390100	Pie, tofu with fruit	12.13	12.13
53391000	Pie shell	28.59	28.59
53391100	Pie shell, graham cracker	24.83	24.83
53391150	Pie shell, chocolate wafer	22.42	22.42
53391200	Vanilla wafer dessert base	36.20	36.20
Quick Breads (Biscuits, Cornbread, Corn Muffins, Tortillas, Muffins, Popovers, and Other Quick Breads)			
52101000	Biscuit, NFS	18.92	18.92
52101040	Crumpet	1.69	1.69
52102040	Biscuit, from refrigerated dough	11.22	11.22
52103000	Biscuit, from fast food / restaurant	18.92	18.92
52104040	Biscuit, wheat	18.19	18.19
52104100	Biscuit, cheese	20.43	20.43
52104200	Biscuit with fruit	17.05	17.05
52105100	Scone	17.84	17.84
52105200	Scone, with fruit	16.08	16.08
52201000	Cornbread, prepared from mix	9.58	9.58
52204000	Cornbread stuffing	8.80	8.80
52206010	Cornbread muffin, stick, round	8.40	8.40
52208010	Corn pone, baked	4.31	4.31
52208020	Corn pone, fried	9.78	9.78
52208760	Gordita/sope shell, plain, no filling	16.19	16.19
52209010	Hush puppy	13.25	13.25
52211010	Johnnycake	7.38	7.38
52213010	Spoonbread	6.83	6.83
52215000	Tortilla, NFS	5.42	5.42
52215100	Tortilla, corn	2.85	2.85
52215200	Tortilla, flour	7.99	7.99
52215260	Tortilla, whole wheat	9.76	9.76
52215300	Taco shell, corn	21.79	21.79
52215350	Taco shell, flour	29.07	29.07
52220110	Arepa Dominicana	13.94	13.94
52301000	Muffin, NFS	16.07	16.07

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
52302010	Muffin, fruit	16.07	16.07
52302020	Muffin, fruit, low fat	4.22	4.22
52302500	Muffin, chocolate chip	18.82	18.82
52302600	Muffin, chocolate	18.50	18.50
52303010	Muffin, whole wheat	18.25	18.25
52303500	Muffin, wheat	17.78	17.78
52304000	Muffin, whole grain	17.78	17.78
52304010	Muffin, wheat bran	5.82	5.82
52304040	Muffin, bran with fruit, lowfat	1.49	1.49
52304100	Muffin, oatmeal	18.69	18.69
52304150	Muffin, oat bran	7.40	7.40
52306010	Muffin, plain	15.95	15.95
52306300	Muffin, cheese	22.70	22.70
52306500	Muffin, pumpkin	12.72	12.72
52306550	Muffin, zucchini	12.94	12.94
52306700	Muffin, carrot	12.98	12.98
52311010	Popover	8.69	8.69
52401000	Bread, Boston Brown	4.53	4.53
52403000	Bread, nut	19.55	19.55
52404060	Bread, pumpkin	12.72	12.72
52405010	Bread, fruit	17.61	17.61
52407000	Bread, zucchini	12.94	12.94
52408000	Bread, Irish soda	8.66	8.66
53450000	Turnover or dumpling, apple	18.08	18.08
53450300	Turnover or dumpling, berry	17.69	17.69
53450500	Turnover or dumpling, cherry	15.11	15.11
53450800	Turnover or dumpling, lemon	15.67	15.67
53451000	Turnover or dumpling, peach	16.61	16.61
53451500	Turnover, guava	16.28	16.28
53451750	Turnover, pumpkin	14.36	14.36
53453150	Empanada, Mexican turnover, fruit-filled	16.25	16.25
53453170	Empanada, Mexican turnover, pumpkin	11.63	11.63
55610300	Dumpling, plain	3.21	3.21
55701000	Cake made with glutinous rice	6.55	6.55
55702000	Cake or pancake made with rice flour and/or dried beans	0.35	0.35
55703000	Cake made with glutinous rice and dried beans	0.34	0.34
Yeast Breads and Rolls			
51000100	Bread, NS as to major flour	3.59	3.59
51000110	Bread, NS as to major flour, toasted	3.94	3.94

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
51000180	Bread, made from home recipe or purchased at a bakery, NS as to major flour	3.41	3.41
51000190	Bread, made from home recipe or purchased at a bakery, toasted, NS as to major flour	3.75	3.75
51000200	Roll, NS as to major flour	3.91	3.91
51000300	Roll, hard, NS as to major flour	4.30	4.30
51000400	Roll, bran, NS as to type of bran	6.00	6.00
51101000	Bread, white	3.59	3.59
51101010	Bread, white, toasted	3.94	3.94
51101050	Bread, white, made from home recipe or purchased at a bakery	3.41	3.41
51101060	Bread, white, made from home recipe or purchased at a bakery, toasted	3.75	3.75
51102010	Bread, white with whole wheat swirl	3.57	3.57
51102020	Bread, white with whole wheat swirl, toasted	4.12	4.12
51105010	Bread, Cuban	2.42	2.42
51105040	Bread, Cuban, toasted	2.66	2.66
51106010	Bread, native, water, Puerto Rican style	3.26	3.26
51106020	Bread, native, water, toasted, Puerto Rican style	3.58	3.58
51106200	Bread, lard, Puerto Rican style	2.95	2.95
51106210	Bread, lard, toasted, Puerto Rican style	3.28	3.28
51106300	Bread, caressed, Puerto Rican style	4.58	4.58
51106310	Bread, caressed, toasted, Puerto Rican style	5.03	5.03
51107010	Bread, French or Vienna	2.42	2.42
51107040	Bread, French or Vienna, toasted	2.66	2.66
51108010	Focaccia, Italian flatbread, plain	7.89	7.89
51108100	Naan, Indian flatbread	7.28	7.28
51109010	Bread, Italian, Grecian, Armenian	2.73	2.73
51109040	Bread, Italian, Grecian, Armenian, toasted	3.00	3.00
51109100	Bread, pita	1.20	1.20
51109110	Bread, pita, toasted	1.32	1.32
51109150	Bread, pita with fruit	1.05	1.05
51109200	Bread, pita with fruit, toasted	1.15	1.15
51111010	Bread, cheese	20.83	20.83
51111040	Bread, cheese, toasted	22.89	22.89
51113010	Bread, cinnamon	5.29	5.29
51113100	Bread, cinnamon, toasted	3.94	3.94
51115010	Bread, cornmeal and molasses	3.79	3.79
51115020	Bread, cornmeal and molasses, toasted	4.17	4.17
51119010	Bread, egg, Challah	6.00	6.00
51119040	Bread, egg, Challah, toasted	6.59	6.59
51121015	Garlic bread, NFS	16.58	16.58

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
51121025	Garlic bread, from fast food / restaurant	16.58	16.58
51121035	Garlic bread, from frozen	16.61	16.61
51121045	Garlic bread, with parmesan cheese, from fast food / restaurant	16.80	16.80
51121055	Garlic bread, with parmesan cheese, from frozen	16.83	16.83
51121065	Garlic bread, with melted cheese, from fast food / restaurant	17.34	17.34
51121075	Garlic bread, with melted cheese, from frozen	17.10	17.10
51121110	Bread, onion	2.92	2.92
51121120	Bread, onion, toasted	3.21	3.21
51122000	Bread, reduced calorie and/or high fiber, white or NFS	2.50	2.50
51122010	Bread, reduced calorie and/or high fiber, white or NFS, toasted	2.75	2.75
51122100	Bread, reduced calorie and/or high fiber, white or NFS, with fruit and/or nuts	2.14	2.14
51122110	Bread, reduced calorie and/or high fiber, white or NFS, with fruit and/or nuts, toasted	2.35	2.35
51122300	Bread, white, special formula, added fiber	2.15	2.15
51122310	Bread, white, special formula, added fiber, toasted	2.36	2.36
51123010	Bread, high protein	2.20	2.20
51123020	Bread, high protein, toasted	2.42	2.42
51127010	Bread, potato	3.13	3.13
51127020	Bread, potato, toasted	3.44	3.44
51129010	Bread, raisin	3.26	3.26
51129020	Bread, raisin, toasted	3.58	3.58
51130510	Bread, white, low sodium or no salt	3.60	3.60
51130520	Bread, white, low sodium or no salt, toasted	3.96	3.96
51133010	Bread, sour dough	2.42	2.42
51133020	Bread, sour dough, toasted	2.66	2.66
51134000	Bread, sweet potato	2.84	2.84
51134010	Bread, sweet potato, toasted	3.12	3.12
51135000	Bread, vegetable	3.23	3.23
51135010	Bread, vegetable, toasted	3.55	3.55
51136000	Bruschetta	7.61	7.61
51140100	Bread, dough, fried	18.79	18.79
51150000	Roll, white, soft	3.91	3.91
51153000	Roll, white, hard	4.30	4.30
51154010	Roll, white, hot dog bun	3.91	3.91
51154100	Roll, white, hamburger bun	3.91	3.91
51154510	Roll, diet	2.42	2.42
51154550	Roll, egg bread	6.00	6.00
51154600	Roll, cheese	7.85	7.85
51155000	Roll, French or Vienna	4.30	4.30

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
51156500	Roll, garlic	6.44	6.44
51157000	Roll, white, hoagie, submarine	3.91	3.91
51158100	Roll, Mexican, bolillo	5.80	5.80
51159000	Roll, sour dough	2.42	2.42
51168000	Bread, Spanish coffee	8.72	8.72
51180010	Bagel	1.32	1.32
51180030	Bagel, with raisins	1.21	1.21
51180080	Bagel, with fruit other than raisins	1.25	1.25
51182010	Bread stuffing	8.51	8.51
51182020	Bread stuffing made with egg	11.90	11.90
51183990	Breadsticks, NFS	12.85	12.85
51184200	Breadsticks, soft, NFS	12.85	12.85
51184210	Breadsticks, soft, from fast food / restaurant	12.85	12.85
51184220	Breadsticks, soft, from frozen	9.16	9.16
51184230	Breadsticks, soft, with parmesan cheese, from fast food / restaurant	13.15	13.15
51184240	Breadsticks, soft, with parmesan cheese, from frozen	9.16	9.16
51184250	Breadsticks, soft, topped with melted cheese	14.36	14.36
51184260	Breadsticks, soft, stuffed with melted cheese	14.36	14.36
51186010	Muffin, English	1.69	1.69
51186100	Muffin, English, with raisins	1.55	1.55
51186130	Muffin, English, cheese	3.31	3.31
51186160	Muffin, English, with fruit other than raisins	1.80	1.80
51300050	Bread, whole grain white	2.15	2.15
51300060	Bread, whole grain white, toasted	2.36	2.36
51300100	Bagel, whole grain white	1.53	1.53
51300110	Bread, whole wheat	3.55	3.55
51300120	Bread, whole wheat, toasted	3.90	3.90
51300140	Bread, whole wheat, made from home recipe or purchased at bakery	4.07	4.07
51300150	Bread, whole wheat, made from home recipe or purchased at bakery, toasted	4.48	4.48
51300175	Bread, chappatti or roti, wheat	9.20	9.20
51300180	Bread, puri, wheat	24.75	24.75
51300185	Bread, paratha, wheat	13.20	13.20
51300210	Bread, whole wheat, with raisins	3.98	3.98
51300220	Bread, whole wheat, with raisins, toasted	4.38	4.38
51301010	Bread, wheat or cracked wheat	4.53	4.53
51301020	Bread, wheat or cracked wheat, toasted	4.98	4.98
51301040	Bread, wheat or cracked wheat, made from home recipe or purchased at bakery	3.64	3.64

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
51301050	Bread, wheat or cracked wheat, made from home recipe or purchased at bakery, toasted	4.00	4.00
51301120	Bread, wheat or cracked wheat, with raisins	3.64	3.64
51301130	Bread, wheat or cracked wheat, with raisins, toasted	4.00	4.00
51301510	Bread, wheat or cracked wheat, reduced calorie and/or high fiber	2.55	2.55
51301520	Bread, wheat or cracked wheat, reduced calorie and/or high fiber, toasted	2.80	2.80
51301540	Bread, French or Vienna, whole wheat	1.04	1.04
51301550	Bread, French or Vienna, whole wheat, toasted	1.14	1.14
51301600	Bread, pita, whole wheat	1.71	1.71
51301610	Bread, pita, whole wheat, toasted	1.88	1.88
51301620	Bread, pita, wheat or cracked wheat	1.71	1.71
51301630	Bread, pita, wheat or cracked wheat, toasted	1.88	1.88
51301700	Bagel, wheat	1.53	1.53
51301750	Bagel, whole wheat	1.53	1.53
51301800	Bagel, wheat, with raisins	1.40	1.40
51301805	Bagel, whole wheat, with raisins	1.40	1.40
51301820	Bagel, wheat, with fruit and nuts	2.68	2.68
51301900	Bagel, wheat bran	1.53	1.53
51302500	Muffin, English, wheat bran	2.00	2.00
51302520	Muffin, English, wheat bran, with raisins	1.82	1.82
51303010	Muffin, English, wheat or cracked wheat	2.00	2.00
51303030	Muffin, English, whole wheat	2.00	2.00
51303050	Muffin, English, wheat or cracked wheat, with raisins	1.84	1.84
51303070	Muffin, English, whole wheat, with raisins	1.84	1.84
51303100	Muffin, English, whole grain white	2.00	2.00
51320010	Roll, wheat or cracked wheat	6.30	6.30
51320060	Roll, wheat or cracked wheat, hot dog bun	3.61	3.61
51320070	Roll, wheat or cracked wheat, hamburger bun	3.61	3.61
51320500	Roll, whole wheat	6.30	6.30
51320550	Roll, whole wheat, hot dog bun	4.38	4.38
51320560	Roll, whole wheat, hamburger bun	4.38	4.38
51320700	Roll, whole grain white	3.49	3.49
51320710	Roll, whole grain white, hot dog bun	3.49	3.49
51320720	Roll, whole grain white, hamburger bun	3.49	3.49
51401010	Bread, rye	3.30	3.30
51401020	Bread, rye, toasted	3.63	3.63
51401030	Bread, marble rye and pumpernickel	3.30	3.30
51401040	Bread, marble rye and pumpernickel, toasted	3.63	3.63
51401200	Muffin, English, rye	3.30	3.30

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
51404010	Bread, pumpernickel	3.10	3.10
51404020	Bread, pumpernickel, toasted	3.41	3.41
51404500	Bagel, pumpernickel	1.53	1.53
51404550	Muffin, English, pumpernickel	3.10	3.10
51407010	Bread, black	3.10	3.10
51407020	Bread, black, toasted	3.41	3.41
51420000	Roll, rye	3.30	3.30
51421000	Roll, pumpernickel	2.80	2.80
51501010	Bread, oatmeal	4.40	4.40
51501020	Bread, oatmeal, toasted	4.84	4.84
51501040	Bread, oat bran	4.89	4.89
51501050	Bread, oat bran, toasted	4.84	4.84
51501080	Bagel, oat bran	1.53	1.53
51502010	Roll, oatmeal	4.40	4.40
51503000	Muffin, English, oat bran	4.40	4.40
51503040	Muffin, English, oat bran, with raisins	3.98	3.98
51601010	Bread, multigrain, toasted	4.65	4.65
51601020	Bread, multigrain	4.23	4.23
51601210	Bread, multigrain, with raisins	3.83	3.83
51601220	Bread, multigrain, with raisins, toasted	4.21	4.21
51602010	Bread, multigrain, reduced calorie and/or high fiber	2.55	2.55
51602020	Bread, multigrain, reduced calorie and/or high fiber, toasted	2.80	2.80
51620000	Roll, multigrain	6.00	6.00
51620020	Roll, multigrain, hot dog bun	6.00	6.00
51620030	Roll, multigrain, hamburger bun	6.00	6.00
51630000	Bagel, multigrain	1.53	1.53
51630100	Bagel, multigrain, with raisins	1.40	1.40
51630200	Muffin, English, multigrain	2.00	2.00
51801010	Bread, barley	4.53	4.53
51801020	Bread, barley, toasted	4.98	4.98
51804010	Bread, soy	3.44	3.44
51804020	Bread, soy, toasted	3.78	3.78
51805010	Bread, sunflower meal	8.20	8.20
51805020	Bread, sunflower meal, toasted	9.01	9.01
51806010	Bread, rice	5.24	5.24
51806020	Bread, rice, toasted	5.76	5.76
51807000	Injera, Ethiopian bread	0.84	0.84
51808000	Bread, gluten free	5.24	5.24
51808010	Bread, gluten free, toasted	5.76	5.76
51808100	Roll, gluten free	2.65	2.65

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
99995130	Wheat bread as ingredient in sandwiches	3.98	3.98
99995135	Wheat bun as ingredient in sandwiches	3.99	3.99
Breakfast Cereals			
Ready-to-Eat Cereals			
57000100	Cereal, oat, NFS	6.60	6.60
57100100	Cereal, ready-to-eat, NFS	4.81	4.81
57101000	Cereal (Kellogg's All-Bran)	4.90	4.90
57103000	Cereal (Post Alpha-Bits)	4.60	4.60
57103100	Cereal (General Mills Cheerios Apple Cinnamon)	6.09	6.09
57104000	Cereal (Kellogg's Apple Jacks)	3.40	3.40
57106050	Cereal (Post Great Grains Banana Nut Crunch)	8.80	8.80
57106060	Cereal (General Mills Cheerios Banana Nut)	4.00	4.00
57106260	Cereal (General Mills Cheerios Berry Burst)	4.50	4.50
57117000	Cereal (Quaker Cap'n Crunch)	5.12	5.12
57117500	Cereal (Quaker Christmas Crunch)	4.83	4.83
57119000	Cereal (Quaker Cap'n Crunch's Crunchberries)	4.83	4.83
57120000	Cereal (Quaker Cap'n Crunch's Peanut Butter Crunch)	9.23	9.23
57123000	Cereal (General Mills Cheerios)	6.60	6.60
57124030	Cereal (General Mills Chex Chocolate)	8.39	8.39
57124050	Cereal (General Mills Chex Cinnamon)	6.59	6.59
57124100	Cereal (General Mills Cheerios Chocolate)	5.09	5.09
57124200	Cereal, chocolate flavored, frosted, puffed corn	3.50	3.50
57124300	Cereal (General Mills Lucky Charms Chocolate)	4.40	4.40
57125000	Cereal (General Mills Cinnamon Toast Crunch)	10.25	10.25
57125010	Cereal (General Mills 25% Less Sugar Cinnamon Toast Crunch)	9.89	9.89
57125900	Cereal (General Mills Honey Nut Clusters)	2.00	2.00
57126000	Cereal (Kellogg's Cocoa Krispies)	2.70	2.70
57127000	Cereal (Post Cocoa Pebbles)	4.10	4.10
57128000	Cereal (General Mills Cocoa Puffs)	5.20	5.20
57130000	Cereal (General Mills Cookie Crisp)	4.40	4.40
57132000	Cereal (General Mills Chex Corn)	2.40	2.40
57134000	Cereal, corn flakes	0.40	0.40
57135000	Cereal (Kellogg's Corn Flakes)	0.40	0.40
57137000	Cereal, corn puffs	3.46	3.46
57139000	Cereal (General Mills Count Chocula)	4.69	4.69
57143000	Cereal (Kellogg's Cracklin' Oat Bran)	14.10	14.10
57143500	Cereal (Post Great Grains, Cranberry Almond Crunch)	5.90	5.90
57148000	Cereal (Kellogg's Crispix)	0.80	0.80
57151000	Cereal, crispy rice	1.26	1.26
57206700	Cereal (General Mills Fiber One)	2.29	2.29

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
57206710	Cereal (General Mills Fiber One Honey Clusters)	2.59	2.59
57206715	Cereal (General Mills Fiber One Raisin Bran Clusters)	2.29	2.29
57207000	Cereal, bran flakes	2.90	2.90
57208000	Cereal (Kellogg's All-Bran Complete Wheat Flakes)	2.50	2.50
57209000	Cereal (Post Bran Flakes)	2.10	2.10
57211000	Cereal (General Mills Frankenberry)	4.30	4.30
57213000	Cereal (Kellogg's Froot Loops)	3.40	3.40
57213010	Cereal (Kellogg's Froot Loops Marshmallow)	2.79	2.79
57213850	Cereal (General Mills Cheerios Frosted)	4.69	4.69
57214000	Cereal (Kellogg's Frosted Mini-Wheats)	1.60	1.60
57216000	Cereal, frosted rice	0.40	0.40
57221700	Cereal, fruit rings	3.20	3.20
57221810	Cereal (General Mills Cheerios Fruity)	4.59	4.59
57223000	Cereal (Post Fruity Pebbles)	4.02	4.02
57224000	Cereal (General Mills Golden Grahams)	3.20	3.20
57227000	Cereal, granola	11.46	11.46
57229000	Cereal (Kellogg's Low Fat Granola)	11.46	11.46
57230000	Cereal (Post Grape-Nuts)	1.81	1.81
57231200	Cereal (Post Great Grains Raisins, Dates, and Pecans)	7.10	7.10
57237100	Cereal (Post Honey Bunches of Oats Honey Roasted)	5.46	5.46
57237200	Cereal (Post Honey Bunches of Oats with Vanilla Bunches)	5.10	5.10
57237300	Cereal (Post Honey Bunches of Oats with Almonds)	7.30	7.30
57238000	Cereal (Post Honeycomb)	2.93	2.93
57240100	Cereal (General Mills Chex Honey Nut)	2.00	2.00
57241000	Cereal (General Mills Cheerios Honey Nut)	5.00	5.00
57241200	Cereal (Post Shredded Wheat Honey Nut)	2.90	2.90
57243000	Cereal (Kellogg's Honey Smacks)	2.20	2.20
57301500	Cereal (Kashi 7 Whole Grain Puffs)	2.30	2.30
57301505	Cereal (Kashi Autumn Wheat)	1.40	1.40
57301510	Cereal (Kashi GOLEAN)	2.20	2.20
57301511	Cereal (Kashi GOLEAN Crunch)	5.90	5.90
57301512	Cereal (Kashi GOLEAN Crunch Honey Almond Flax)	9.90	9.90
57301530	Cereal (Kashi Heart to Heart Honey Toasted Oat)	5.00	5.00
57303100	Cereal (General Mills Kix)	3.46	3.46
57303105	Cereal (General Mills Honey Kix)	3.90	3.90
57303200	Cereal (Kellogg's Krave)	6.97	6.97
57304100	Cereal (Quaker Life)	4.43	4.43
57305100	Cereal (General Mills Lucky Charms)	5.02	5.02
57305150	Cereal, frosted oat cereal with marshmallows	3.33	3.33
57305160	Cereal (Malt-O-Meal Blueberry Muffin Tops)	1.94	1.94

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
57305165	Cereal (Malt-O-Meal Cinnamon Toasters)	12.06	12.06
57305170	Cereal (Malt-O-Meal Coco-Roos)	4.61	4.61
57305174	Cereal (Malt-O-Meal Colossal Crunch)	5.28	5.28
57305175	Cereal (Malt-O-Meal Cocoa Dyno-Bites)	3.43	3.43
57305180	Cereal (Malt-O-Meal Corn Bursts)	0.35	0.35
57305210	Cereal (Malt-O-Meal Frosted Flakes)	0.87	0.87
57305300	Cereal (Malt-O-Meal Fruity Dyno-Bites)	3.15	3.15
57305400	Cereal (Malt-O-Meal Honey Graham Squares)	3.20	3.20
57305500	Cereal (Malt-O-Meal Honey Nut Toasty O's)	5.00	5.00
57305600	Cereal (Malt-O-Meal Marshmallow Mateys)	3.53	3.53
57306500	Cereal (Malt-O-Meal Golden Puffs)	2.20	2.20
57306700	Cereal (Malt-O-Meal Toasted Oat Cereal)	6.60	6.60
57306800	Cereal (Malt-O-Meal Tootie Fruities)	3.20	3.20
57308190	Cereal, muesli	5.40	5.40
57308400	Cereal (General Mills Cheerios Multigrain)	4.09	4.09
57309100	Cereal (Nature Valley Granola)	11.46	11.46
57316380	Cereal (General Mills Cheerios Oat Cluster Crunch)	4.60	4.60
57316385	Cereal (General Mills Cheerios Protein)	5.07	5.07
57316450	Cereal (General Mills Oatmeal Crisp with Almonds)	6.69	6.69
57316710	Cereal (Quaker Honey Graham Oh's)	7.63	7.63
57320500	Cereal (Quaker Granola with Oats, Honey, and Raisins)	11.46	11.46
57321900	Cereal (Nature's Path Organic Flax Plus)	5.46	5.46
57326000	Cereal (Barbara's Puffins)	3.70	3.70
57327450	Cereal (Quaker Toasted Oat Bran)	5.11	5.11
57327500	Cereal (Quaker Oatmeal Squares)	4.83	4.83
57329000	Cereal, raisin bran	1.74	1.74
57330000	Cereal (Kellogg's Raisin Bran)	2.72	2.72
57330010	Cereal (Kellogg's Raisin Bran Crunch)	1.79	1.79
57331000	Cereal (Post Raisin Bran)	1.60	1.60
57332100	Cereal (General Mills Raisin Nut Bran)	5.30	5.30
57335550	Cereal (General Mills Reese's Puffs)	11.10	11.10
57336000	Cereal (General Mills Chex Rice)	1.89	1.89
57337000	Cereal, rice flakes	1.26	1.26
57339000	Cereal (Kellogg's Rice Krispies)	2.05	2.05
57339500	Cereal (Kellogg's Rice Krispies Treats Cereal)	4.19	4.19
57340000	Cereal, puffed rice	0.90	0.90
57341200	Cereal (Kellogg's Smart Start Strong)	1.50	1.50
57341300	Cereal (Kellogg's Smorz)	3.50	3.50
57344000	Cereal (Kellogg's Special K)	1.79	1.79
57344001	Cereal (Kellogg's Special K Blueberry)	1.50	1.50

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
57344005	Cereal (Kellogg's Special K Chocolatey Delight)	7.30	7.30
57344010	Cereal (Kellogg's Special K Red Berries)	1.29	1.29
57344015	Cereal (Kellogg's Special K Fruit & Yogurt)	2.90	2.90
57344020	Cereal (Kellogg's Special K Vanilla Almond)	4.00	4.00
57344025	Cereal (Kellogg's Special K Cinnamon Pecan)	6.00	6.00
57347000	Cereal (Kellogg's Corn Pops)	1.30	1.30
57348000	Cereal, frosted corn flakes	0.87	0.87
57349000	Cereal (Kellogg's Frosted Flakes)	1.68	1.68
57355000	Cereal (Post Golden Crisp)	1.70	1.70
57401100	Cereal, toasted oat	5.36	5.36
57407100	Cereal (General Mills Trix)	3.79	3.79
57408100	Cereal (Uncle Sam)	11.60	11.60
57411000	Cereal (General Mills Chex Wheat)	1.80	1.80
57416000	Cereal, puffed wheat, plain	2.15	2.15
57416010	Cereal, puffed wheat, sweetened	2.20	2.20
57417000	Cereal (Post Shredded Wheat)	2.06	2.06
57418000	Cereal (General Mills Wheaties)	2.30	2.30
Cereal and Nutrition Bars			
53710400	Cereal or granola bar (General Mills Fiber One Chewy Bar)	10.00	10.00
53710500	Cereal or granola bar (Kellogg's Nutri-Grain Cereal Bar)	8.67	8.67
53710502	Cereal or granola bar (Kellogg's Nutri-Grain Yogurt Bar)	8.67	8.67
53710504	Cereal or granola bar (Kellogg's Nutri-Grain Fruit and Nut Bar)	10.93	10.93
53710600	Milk 'n Cereal bar	10.98	10.98
53710700	Cereal or granola bar (Kellogg's Special K bar)	9.09	9.09
53710800	Cereal or granola bar (Kashi Chewy)	7.69	7.69
53710802	Cereal or granola bar (Kashi Crunchy)	15.71	15.71
53710810	Cereal or granola bar (KIND Fruit and Nut Bar)	31.89	31.89
53710900	Cereal or granola bar (General Mills Nature Valley Chewy Trail Mix)	11.43	11.43
53710902	Cereal or granola bar, with yogurt coating (General Mills Nature Valley Chewy Granola Bar)	11.43	11.43
53710904	Cereal or granola bar (General Mills Nature Valley Sweet and Salty Granola Bar)	22.86	22.86
53710906	Cereal or granola bar (General Mills Nature Valley Crunchy Granola Bar)	19.80	19.80
53711000	Cereal or granola bar (Quaker Chewy Granola Bar)	16.57	16.57
53711002	Cereal or granola bar (Quaker Chewy 90 Calorie Granola Bar)	8.33	8.33
53711004	Cereal or granola bar (Quaker Chewy 25% Less Sugar Granola Bar)	12.50	12.50
53711006	Cereal or granola bar (Quaker Chewy Dipps Granola Bar)	20.42	20.42
53711100	Cereal or granola bar (Quaker Granola Bites)	17.50	17.50

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
53712000	Snack bar, oatmeal	6.67	6.67
53712100	Cereal or Granola bar, NFS	19.80	19.80
53712200	Cereal or granola bar, lowfat, NFS	8.33	8.33
53712210	Cereal or granola bar, nonfat	0.90	0.90
53713000	Cereal or granola bar, reduced sugar, NFS	12.50	12.50
53713010	Cereal or granola bar, fruit and nut	31.89	31.89
53713100	Cereal or granola bar, peanuts , oats, sugar, wheat germ	19.80	19.80
53714200	Cereal or granola bar, chocolate coated, NFS	20.42	20.42
53714210	Cereal or granola bar, with coconut, chocolate coated	32.20	32.20
53714220	Cereal or granola bar with nuts, chocolate coated	31.20	31.20
53714230	Cereal or granola bar, oats, nuts, coated with non-chocolate coating	20.00	20.00
53714250	Cereal or granola bar, coated with non-chocolate coating	31.10	31.10
53714300	Cereal or granola bar, high fiber, coated with non-chocolate yogurt coating	10.00	10.00
53714400	Cereal or granola bar, with rice cereal	9.00	9.00
53714500	Breakfast bar, NFS	7.50	7.50
53714510	Breakfast bar, date, with yogurt coating	7.30	7.30
53714520	Breakfast bar, cereal crust with fruit filling, lowfat	7.50	7.50
53720100	Nutrition bar (Balance Original Bar)	12.00	12.00
53720200	Nutrition bar (Clif Bar)	5.88	5.88
53720210	Nutrition bar (Clif Kids Organic Zbar)	9.72	9.72
53720300	Nutrition bar (PowerBar)	3.11	3.11
53720400	Nutrition bar (Slim Fast Original Meal Bar)	8.92	8.92
53720500	Nutrition bar (Snickers Marathon Protein Bar)	12.50	12.50
53720600	Nutrition bar (South Beach Living Meal Bar)	8.92	8.92
53720610	Nutrition bar (South Beach Living High Protein Bar)	15.17	15.17
53720700	Nutrition bar (Tiger's Milk)	14.29	14.29
53720800	Nutrition bar (Zone Perfect Classic Crunch)	14.00	14.00
53729000	Nutrition bar or meal replacement bar, NFS	14.00	14.00
Cheeses			
Cheese-Based Spreads and Dips			
14410330	Cheese spread, American or Cheddar cheese base, reduced fat	8.88	8.88
14420100	Cheese spread, American or Cheddar cheese base	21.23	21.23
14420160	Cheese spread, Swiss cheese base	21.23	21.23
14420300	Cheese spread, pressurized can	21.23	21.23
14620150	Cheese dip with chili pepper	9.51	9.51
14620200	Cheese dip	13.02	13.02
Dairy Product Analogs			
Fluid Milk, Imitation			

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
11300100	Non-dairy milk, NFS	1.17	1.17
11320000	Soy milk	1.47	1.47
11320100	Soy milk, light	0.77	0.77
11320200	Soy milk, nonfat	0.04	0.04
11321000	Soy milk, chocolate	1.53	1.53
11321100	Soy milk, light, chocolate	0.64	0.64
11321200	Soy milk, nonfat, chocolate	0.64	0.64
11350000	Almond milk, sweetened	0.93	0.93
11350010	Almond milk, sweetened, chocolate	0.95	0.95
11350020	Almond milk, unsweetened	0.96	0.96
11350030	Almond milk, unsweetened, chocolate	1.00	1.00
11360000	Rice milk	0.97	0.97
11370000	Coconut milk	2.08	2.08
11512030	Hot chocolate / Cocoa, ready to drink, made with non-dairy milk	0.98	0.98
11512120	Hot chocolate / Cocoa, ready to drink, made with non-dairy milk and whipped cream	2.64	2.64
11513310	Chocolate milk, made from dry mix with non-dairy milk	1.27	1.27
11513375	Chocolate milk, made from reduced sugar mix with non-dairy milk	1.34	1.34
11513385	Chocolate milk, made from dry mix with non-dairy milk (Nesquik)	1.27	1.27
11513395	Chocolate milk, made from no sugar added dry mix with non-dairy milk (Nesquik)	1.34	1.34
11513750	Chocolate milk, made from syrup with non-dairy milk	1.04	1.04
11513805	Chocolate milk, made from light syrup with non-dairy milk	1.17	1.17
11513855	Chocolate milk, made from sugar free syrup with non-dairy milk	1.31	1.31
11514150	Hot chocolate / Cocoa, made with dry mix and non-dairy milk	1.57	1.57
11514360	Hot chocolate / Cocoa, made with no sugar added dry mix and non-dairy milk	1.35	1.35
11519215	Strawberry milk, non-dairy	1.13	1.13
Cream Substitute			
12200100	Coffee creamer, NFS	9.97	9.97
12210200	Coffee creamer, liquid	9.97	9.97
12210210	Coffee creamer, liquid, flavored	13.50	13.50
12210260	Coffee creamer, liquid, fat free	3.50	3.50
12210270	Coffee creamer, liquid, fat free, flavored	2.70	2.70
12210280	Coffee creamer, liquid, fat free, sugar free, flavored	3.50	3.50
12210310	Coffee creamer, liquid, sugar free, flavored	3.50	3.50
12210400	Coffee creamer, powder	32.92	32.92
12210420	Coffee creamer, powder, flavored	21.47	21.47
12210430	Coffee creamer, powder, fat free	15.70	15.70
12210440	Coffee creamer,powder, fat free, flavored	15.70	15.70

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
12210505	Coffee creamer,powder, sugar free, flavored	32.92	32.92
12210520	Coffee creamer, soy, liquid	9.97	9.97
12220200	Whipped topping	25.31	25.31
12220270	Whipped topping, fat free	13.10	13.10
12220280	Whipped topping, sugar free	13.10	13.10
Sour Cream, Imitation			
12320100	Sour cream, imitation	19.52	19.52
Yogurt, Non-Dairy			
41420380	Yogurt, soy	1.80	1.80
42401100	Yogurt, coconut milk	3.50	3.50
Imitation Cheese			
14502000	Imitation cheese	32.00	32.00
Non-Dairy Ice Cream			
41480020	Frozen dessert, non-dairy	8.94	8.94
Non-Milk Based Meal Replacements			
95120050	Nutritional drink or shake, liquid, soy-based	5.38	5.38
95201300	Nutritional powder mix (EAS Soy Protein Powder)	3.57	3.57
95230010	Nutritional powder mix, protein, soy based, NFS	5.56	5.56
Fats and Oils			
Margarine, and Margarine-Like Spreads			
81102000	Margarine, NFS	65.04	65.04
81102010	Margarine, stick	80.71	80.71
81102020	Margarine, tub	59.81	59.81
81103035	Margarine-oil blend, NFS	59.81	59.81
81103040	Margarine-oil blend, stick	80.71	80.71
81103080	Margarine-oil blend, tub	59.81	59.81
81103090	Butter replacement, liquid	59.81	59.81
81104010	Margarine-oil blend, tub, light	37.91	37.91
81104020	Margarine-oil blend, stick, light	37.91	37.91
81106010	Butter replacement, powder	1.00	1.00
81200100	Oil or table fat, NFS	87.34	87.34
81203000	Shortening, NS as to vegetable or animal	99.97	99.97
Mayonnaise and Mayonnaise-Type Dressings			
81302040	Sandwich spread	34.00	34.00
81302050	Tartar sauce	16.70	16.70
83100200	Salad dressing, NFS, for sandwiches	64.20	64.20
83107000	Mayonnaise, regular	74.85	74.85
83108000	Vegan mayonnaise	19.20	19.20
83110000	Mayonnaise-type salad dressing	21.60	21.60
83204000	Mayonnaise, light	22.22	22.22

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
83204030	Mayonnaise, reduced fat, with olive oil	40.00	40.00
83204050	Mayonnaise-type salad dressing, light	10.00	10.00
Salad Dressings (regular and low calorie)			
83100100	Salad dressing, NFS, for salads	44.54	44.54
83101000	Blue or roquefort cheese dressing	51.10	51.10
83101600	Bacon and tomato dressing	35.00	35.00
83102000	Caesar dressing	57.85	57.85
83103000	Coleslaw dressing	34.53	34.53
83104000	French or Catalina dressing	39.07	39.07
83105500	Honey mustard dressing	40.83	40.83
83106000	Italian dressing, made with vinegar and oil	21.12	21.12
83109000	Russian dressing	26.18	26.18
83112000	Avocado dressing	43.33	43.33
83112500	Creamy dressing	44.54	44.54
83112950	Poppy seed dressing	33.33	33.33
83112990	Sesame dressing	45.20	45.20
83114000	Thousand Island dressing	35.06	35.06
83115000	Yogurt dressing	18.27	18.27
83200100	Salad dressing, light, NFS	14.00	14.00
83201000	Blue or roquefort cheese dressing, light	7.20	7.20
83201400	Coleslaw dressing, light	20.00	20.00
83202020	French or Catalina dressing, light	11.52	11.52
83203000	Caesar dressing, light	4.40	4.40
83204500	Honey mustard dressing, light	10.00	10.00
83205450	Italian dressing, light	6.68	6.68
83206000	Russian dressing, light	4.00	4.00
83206500	Sesame dressing, light	6.68	6.68
83207000	Thousand Island dressing, light	11.32	11.32
83208500	Korean dressing or marinade	31.34	31.34
83210100	Creamy dressing, light	14.00	14.00
83300100	Blue or roquefort cheese dressing, fat free	1.01	1.01
83300200	Caesar dressing, fat free	0.23	0.23
83300300	Creamy dressing, fat free	2.70	2.70
83300400	French or Catalina dressing, fat free	0.27	0.27
83300500	Honey mustard dressing, fat free	1.47	1.47
83300600	Italian dressing, fat free	0.87	0.87
83300800	Russian dressing, fat free	1.45	1.45
83300900	Salad dressing, fat free, NFS	2.70	2.70
83301000	Thousand Island dressing, fat free	1.45	1.45
Frozen Dairy Desserts and Mixes			

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
Frozen Yogurt			
11459990	Frozen yogurt, NFS	3.60	3.60
11460000	Frozen yogurt, vanilla	3.60	3.60
11460100	Frozen yogurt, chocolate	3.60	3.60
11460500	Frozen yogurt, soft serve, vanilla	5.60	5.60
11460510	Frozen yogurt, soft serve, chocolate	5.76	5.76
11461200	Frozen yogurt sandwich	6.25	6.25
11461210	Frozen yogurt bar, vanilla	3.60	3.60
11461220	Frozen yogurt bar, chocolate	3.60	3.60
11461250	Frozen yogurt cone, chocolate	3.73	3.73
11461260	Frozen yogurt cone, vanilla	3.73	3.73
11461300	Frozen yogurt cone, vanilla, waffle cone	3.61	3.61
11461320	Frozen yogurt cone, chocolate, waffle cone	3.61	3.61
Ice Cream and Frozen Milk Desserts			
13110000	Ice cream, NFS	11.30	11.30
13110100	Ice cream, vanilla	11.00	11.00
13110102	Ice cream, vanilla, with additional ingredients	11.76	11.76
13110110	Ice cream, chocolate	11.00	11.00
13110112	Ice cream, chocolate, with additional ingredients	11.76	11.76
13110200	Ice cream, soft serve, vanilla	4.83	4.83
13110210	Ice cream, soft serve, chocolate	7.19	7.19
13110460	Gelato, vanilla	16.20	16.20
13110470	Gelato, chocolate	16.98	16.98
13120050	Ice cream bar, vanilla	25.26	25.26
13120100	Ice cream bar, vanilla, chocolate coated	24.10	24.10
13120110	Ice cream candy bar	20.20	20.20
13120140	Ice cream bar, chocolate	23.89	23.89
13120500	Ice cream sandwich, vanilla	11.80	11.80
13120510	Ice cream sandwich, chocolate	11.80	11.80
13120550	Ice cream cookie sandwich	14.11	14.11
13120730	Ice cream cone, scooped, vanilla	10.84	10.84
13120735	Ice cream cone, scooped, vanilla, waffle cone	10.58	10.58
13120740	Ice cream cone, NFS	11.13	11.13
13120770	Ice cream cone, scooped, chocolate	10.84	10.84
13120775	Ice cream cone, scooped, chocolate, waffle cone	10.58	10.58
13120782	Ice cream cone, soft serve, vanilla	4.91	4.91
13120784	Ice cream cone, soft serve, chocolate	7.18	7.18
13120786	Ice cream cone, soft serve, vanilla, waffle cone	4.77	4.77
13120788	Ice cream cone, soft serve, chocolate, waffle cone	6.99	6.99
13120790	Ice cream cone, vanilla, prepackaged	21.88	21.88

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
13120792	Ice cream cone, chocolate, prepackaged	21.80	21.80
13121000	Ice cream sundae, NFS	11.17	11.17
13121100	Ice cream sundae, fruit topping	9.22	9.22
13121120	Banana split	6.90	6.90
13121300	Ice cream sundae, hot fudge topping	11.17	11.17
13121400	Ice cream sundae, caramel topping	9.19	9.19
13126000	Ice cream, fried	15.16	15.16
13130100	Light ice cream, NFS	6.14	6.14
13130300	Light ice cream, vanilla	6.14	6.14
13130310	Light ice cream, chocolate	6.46	6.46
13130700	Soft serve, blended with candy or cookies, from fast food	6.06	6.06
13135000	Light ice cream sandwich, vanilla	8.15	8.15
13135010	Light ice cream sandwich, chocolate	8.40	8.40
13140000	Light ice cream bar, vanilla	16.65	16.65
13140100	Light ice cream bar, vanilla, chocolate coated	16.62	16.62
13140115	Light ice cream bar, chocolate	16.86	16.86
13140700	Creamsicle	3.08	3.08
13140900	Fudgesicle	3.67	3.67
13142100	Light ice cream cone, vanilla, prepackaged	7.30	7.30
13142110	Light ice cream cone, chocolate, prepackaged	7.56	7.56
13150000	Sherbet, all flavors	2.00	2.00
13161600	Fudgesicle, light	1.87	1.87
Gelatins, Puddings, and Fillings			
Puddings, Custards and Other Milk Desserts			
13200110	Pudding, chocolate, NFS	4.60	4.60
13210110	Pudding, bread	4.71	4.71
13210280	Pudding, flavors other than chocolate, NFS	3.78	3.78
13210300	Custard	3.43	3.43
13210350	Flan	4.83	4.83
13210370	Creme brulee	2.66	2.66
13210410	Pudding, rice	2.15	2.15
13210450	Firni, Indian pudding	3.10	3.10
13210520	Pudding, tapioca, made from dry mix	3.88	3.88
13220110	Pudding, flavors other than chocolate, made from dry mix	1.76	1.76
13220120	Pudding, chocolate, made from dry mix	1.98	1.98
13220210	Pudding, flavors other than chocolate, made from dry mix, sugar free	1.93	1.93
13220220	Pudding, chocolate, made from dry mix, sugar free	2.02	2.02
13230110	Pudding, flavors other than chocolate, ready-to-eat	3.78	3.78
13230120	Pudding, flavors other than chocolate, ready-to-eat, sugar free	1.93	1.93

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
13230130	Pudding, chocolate, ready-to-eat	4.60	4.60
13230140	Pudding, chocolate, ready-to-eat, sugar free	2.02	2.02
13230500	Pudding, tapioca, ready-to-eat	3.88	3.88
13241000	Banana pudding	4.23	4.23
13250000	Mousse	14.96	14.96
13252200	Milk dessert or milk candy, Puerto Rican style	7.35	7.35
13252500	Barfi or Burfi, Indian dessert	11.34	11.34
13252590	Trifle	7.10	7.10
13252600	Tiramisu	24.29	24.29
91560100	Haupia	20.45	20.45
Grain Products and Pastas			
Frozen Grain-Based Meals			
58106200	Pizza, cheese, from frozen, thin crust	11.07	11.07
58106205	Pizza, cheese, from frozen, thick crust	8.78	8.78
58106300	Pizza, cheese, with vegetables, from frozen, thin crust	10.81	10.81
58106305	Pizza, cheese with vegetables, from frozen, thick crust	8.22	8.22
58106512	Pizza with pepperoni, from frozen, thin crust	12.71	12.71
58106514	Pizza with pepperoni, from frozen, medium crust	11.38	11.38
58106516	Pizza with pepperoni, from frozen, thick crust	10.05	10.05
58106602	Pizza with meat other than pepperoni, from frozen, thin crust	12.10	12.10
58106604	Pizza with meat other than pepperoni, from frozen, medium crust	10.88	10.88
58106606	Pizza with meat other than pepperoni, from frozen, thick crust	9.65	9.65
58106700	Pizza with meat and vegetables, from frozen, thin crust	14.43	14.43
58106702	Pizza with meat and vegetables, from frozen, medium crust	14.43	14.43
58106705	Pizza with meat and vegetables, from frozen, thick crust	11.75	11.75
58130016	Lasagna with meat, frozen	4.42	4.42
58301050	Lasagna with cheese and meat sauce, diet frozen meal	4.23	4.23
58301110	Vegetable lasagna, frozen meal	7.71	7.71
58301150	Zucchini lasagna, diet frozen meal	3.31	3.31
58302000	Macaroni and cheese, diet frozen meal	4.06	4.06
58302050	Beef and noodles with meat sauce and cheese, diet frozen meal	4.83	4.83
58302080	Noodles with vegetables in tomato-based sauce, diet frozen meal	1.56	1.56
58304010	Spaghetti and meatballs dinner, NFS, frozen meal	3.39	3.39
58304050	Spaghetti with meat and mushroom sauce, diet frozen meal	2.83	2.83
58304060	Spaghetti with meat sauce, diet frozen meal	3.39	3.39
58304200	Ravioli, cheese-filled, with tomato sauce, diet frozen meal	5.01	5.01
58304400	Linguini with vegetables and seafood in white wine sauce, diet frozen meal	3.95	3.95
58305250	Pasta with vegetable and cheese sauce, diet frozen meal	2.82	2.82

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58306010	Beef enchilada dinner, NFS, frozen meal	4.14	4.14
58306020	Beef enchilada, chili gravy, rice, refried beans, frozen meal	4.14	4.14
58306070	Cheese enchilada, frozen meal	7.61	7.61
58310210	Sausage and french toast, frozen meal	11.21	11.21
58310310	Pancakes and sausage, frozen meal	13.73	13.73
Grain Mixtures (Burritos, Enchiladas, Tacos, Tamales, Nachos, Pizza, Pasta Dishes)			
58100000	Burrito, taco, or quesadilla with egg	12.52	12.52
58100005	Burrito, taco, or quesadilla with egg and potato	13.24	13.24
58100010	Burrito, taco, or quesadilla with egg and breakfast meat	14.51	14.51
58100013	Burrito, taco, or quesadilla with egg and breakfast meat, from fast food	15.63	15.63
58100015	Burrito, taco, or quesadilla with egg, potato, and breakfast meat	14.87	14.87
58100017	Burrito, taco, or quesadilla with egg, potato, and breakfast meat, from fast food	13.94	13.94
58100020	Burrito, taco, or quesadilla with egg, beans, and breakfast meat	12.26	12.26
58100100	Burrito with meat	14.48	14.48
58100120	Burrito with meat and beans	11.56	11.56
58100125	Burrito with meat and beans, from fast food	6.80	6.80
58100135	Burrito with meat and sour cream	15.18	15.18
58100140	Burrito with meat, beans, and sour cream	12.64	12.64
58100145	Burrito with meat, beans, and sour cream, from fast food	7.86	7.86
58100160	Burrito with meat, beans, and rice	10.82	10.82
58100165	Burrito with meat, beans, rice, and sour cream	11.93	11.93
58100200	Burrito with chicken	12.02	12.02
58100220	Burrito with chicken and beans	10.23	10.23
58100235	Burrito with chicken and sour cream	13.23	13.23
58100245	Burrito with chicken, beans, and sour cream	11.59	11.59
58100255	Burrito with chicken, beans, and rice	9.52	9.52
58100260	Burrito with chicken, beans, rice, and sour cream	10.90	10.90
58100300	Burrito with beans and rice, meatless	8.29	8.29
58100320	Burrito with beans, meatless	8.83	8.83
58100325	Burrito with beans, meatless, from fast food	6.05	6.05
58100330	Burrito with beans, rice, and sour cream, meatless	9.69	9.69
58100360	Chilaquiles, tortilla casserole with salsa, cheese, and egg	17.41	17.41
58100370	Chilaquiles, tortilla casserole with salsa and cheese, no egg	17.29	17.29
58100500	Enchilada, no sauce	7.24	7.24
58100520	Enchilada with meat and beans, red-chile or enchilada sauce	5.86	5.86
58100525	Enchilada with meat and beans, green-chile or enchilada sauce	7.56	7.56
58100530	Enchilada with meat, red-chile or enchilada sauce	7.24	7.24
58100535	Enchilada with meat, green-chile or enchilada sauce	9.18	9.18

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58100620	Enchilada with chicken and beans, red-chile or enchilada sauce	5.25	5.25
58100625	Enchilada with chicken and beans, green-chile or enchilada sauce	6.90	6.90
58100630	Enchilada with chicken, red-chile or enchilada sauce	5.91	5.91
58100635	Enchilada with chicken, green-chile or enchilada sauce	7.75	7.75
58100720	Enchilada with beans, meatless, red-chile or enchilada sauce	4.68	4.68
58100725	Enchilada with beans, green-chile or enchilada sauce	6.17	6.17
58100800	Enchilada, just cheese, meatless, no beans, red-chile or enchilada sauce	10.21	10.21
58100805	Enchilada, just cheese, meatless, no beans, green-chile or enchilada sauce	12.44	12.44
58101320	Taco or tostada with meat	14.42	14.42
58101323	Taco or tostada with meat, from fast food	12.70	12.70
58101325	Taco or tostada with meat and sour cream	15.38	15.38
58101345	Soft taco with meat	10.81	10.81
58101347	Soft taco with meat, from fast food	9.75	9.75
58101350	Soft taco with meat and sour cream	12.10	12.10
58101357	Soft taco with meat and sour cream, from fast food	9.83	9.83
58101450	Soft taco with chicken	9.69	9.69
58101457	Soft taco with chicken, from fast food	6.35	6.35
58101460	Soft taco with chicken and sour cream	11.12	11.12
58101520	Taco or tostada with chicken	13.90	13.90
58101525	Taco or tostada with chicken and sour cream	14.82	14.82
58101540	Taco or tostada with fish	12.04	12.04
58101555	Soft taco with fish	8.12	8.12
58101610	Soft taco with beans	5.12	5.12
58101615	Soft taco with beans and sour cream	6.64	6.64
58101620	Soft taco with meat and beans	7.64	7.64
58101625	Soft taco with chicken and beans	6.98	6.98
58101630	Soft taco with meat, beans, and sour cream	9.08	9.08
58101635	Soft taco with chicken, beans, and sour cream	8.51	8.51
58101720	Taco or tostada with beans	7.36	7.36
58101725	Taco or tostada with beans and sour cream	8.77	8.77
58101730	Taco or tostada with meat and beans	10.46	10.46
58101733	Taco or tostada with meat and beans, from fast food	11.73	11.73
58101735	Taco or tostada with chicken and beans	9.95	9.95
58101745	Taco or tostada with meat, beans, and sour cream	11.70	11.70
58101750	Taco or tostada with chicken, beans, and sour cream	11.25	11.25
58101800	Ground beef with tomato sauce and taco seasonings on a cornbread crust	8.12	8.12
58101820	Mexican casserole made with ground beef, beans, tomato sauce, cheese, taco seasonings, and corn chips	12.67	12.67

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58101830	Mexican casserole made with ground beef, tomato sauce, cheese, taco seasonings, and corn chips	17.11	17.11
58101930	Taco or tostada salad with meat	9.34	9.34
58101935	Taco or tostada salad with chicken	8.04	8.04
58101940	Taco or tostada salad, meatless	7.37	7.37
58101945	Taco or tostada salad with meat and sour cream	10.59	10.59
58101950	Taco or tostada salad with chicken and sour cream	9.44	9.44
58101955	Taco or tostada salad, meatless with sour cream	8.89	8.89
58103120	Tamale with meat	13.69	13.69
58103130	Tamale with chicken	13.69	13.69
58103210	Tamale, meatless, with sauce, Puerto Rican or Caribbean style	44.37	44.37
58103250	Tamale, plain, meatless, no sauce, Mexican style	7.21	7.21
58103310	Tamale casserole with meat	7.97	7.97
58104090	Nachos with cheese and sour cream	12.00	12.00
58104120	Nachos with cheese	21.50	21.50
58104130	Nachos with meat and cheese	12.51	12.51
58104150	Nachos with chicken and cheese	9.69	9.69
58104160	Nachos with chili	14.22	14.22
58104180	Nachos with meat, cheese, and sour cream	12.31	12.31
58104190	Nachos with chicken, cheese, and sour cream	10.56	10.56
58104260	Gordita, sope, or chalupa with beans	7.70	7.70
58104270	Gordita, sope, or chalupa with beans and sour cream	8.77	8.77
58104280	Gordita, sope, or chalupa with meat and sour cream	14.00	14.00
58104290	Gordita, sope, or chalupa with meat	13.14	13.14
58104320	Gordita, sope, or chalupa with chicken and sour cream	13.08	13.08
58104340	Gordita, sope, or chalupa with chicken	12.22	12.22
58104500	Chimichanga with meat	11.55	11.55
58104520	Chimichanga, meatless	8.33	8.33
58104530	Chimichanga with chicken	11.56	11.56
58104535	Chimichanga with meat and sour cream	15.35	15.35
58104540	Chimichanga, meatless, with sour cream	9.36	9.36
58104550	Chimichanga with chicken and sour cream	12.61	12.61
58104710	Quesadilla, just cheese, meatless	18.02	18.02
58104720	Quesadilla, just cheese, from fast food	19.23	19.23
58104730	Quesadilla with meat	16.82	16.82
58104740	Quesadilla with chicken	16.77	16.77
58104745	Quesadilla with chicken, from fast food	15.25	15.25
58104750	Quesadilla with vegetables	15.98	15.98
58104760	Quesadilla with vegetables and meat	16.39	16.39
58104770	Quesadilla with vegetables and chicken	16.36	16.36

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58104800	Taquito or flauta with cheese	11.37	11.37
58104820	Taquito or flauta with meat	12.79	12.79
58104825	Taquito or flauta with meat and cheese	12.79	12.79
58104830	Taquito or flauta with chicken	12.54	12.54
58104835	Taquito or flauta with chicken and cheese	12.54	12.54
58104900	Taquito or flauta with egg	12.77	12.77
58104905	Taquito or flauta with egg and breakfast meat	14.01	14.01
58105000	Fajita with chicken and vegetables	7.23	7.23
58105050	Fajita with meat and vegetables	7.09	7.09
58105075	Fajita with vegetables	8.71	8.71
58105100	Pupusa, cheese-filled	13.25	13.25
58105105	Pupusa, bean-filled	3.82	3.82
58105110	Pupusa, meat-filled	10.43	10.43
58106210	Pizza, cheese, from restaurant or fast food, NS as to type of crust	9.69	9.69
58106220	Pizza, cheese, from restaurant or fast food, thin crust	13.95	13.95
58106225	Pizza, cheese, from restaurant or fast food, medium crust	9.69	9.69
58106230	Pizza, cheese, from restaurant or fast food, thick crust	10.54	10.54
58106233	Pizza, cheese, stuffed crust	11.63	11.63
58106234	Pizza, cheese, from school lunch, medium crust	8.59	8.59
58106235	Pizza, cheese, from school lunch, thin crust	7.91	7.91
58106236	Pizza, cheese, from school lunch, thick crust	9.27	9.27
58106250	Pizza, extra cheese, thin crust	14.31	14.31
58106260	Pizza, extra cheese, thick crust	11.00	11.00
58106320	Pizza, cheese, with vegetables, from restaurant or fast food, thin crust	12.03	12.03
58106325	Pizza, cheese, with vegetables, from restaurant or fast food, medium crust	8.69	8.69
58106330	Pizza, cheese, with vegetables, from restaurant or fast food, thick crust	9.39	9.39
58106345	Pizza with cheese and extra vegetables, thin crust	10.87	10.87
58106347	Pizza with cheese and extra vegetables, medium crust	8.23	8.23
58106350	Pizza with cheese and extra vegetables, thick crust	9.46	9.46
58106358	Pizza, cheese, with fruit, thin crust	11.56	11.56
58106359	Pizza, cheese, with fruit, medium crust	8.44	8.44
58106360	Pizza, cheese, with fruit, thick crust	9.29	9.29
58106540	Pizza with pepperoni, from restaurant or fast food, NS as to type of crust	11.91	11.91
58106550	Pizza with pepperoni, from restaurant or fast food, thin crust	17.61	17.61
58106555	Pizza with pepperoni, from restaurant or fast food, medium crust	11.91	11.91
58106560	Pizza with pepperoni, from restaurant or fast food, thick crust	12.58	12.58

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58106565	Pizza with pepperoni, stuffed crust	15.01	15.01
58106570	Pizza with pepperoni, from school lunch, thin crust	8.62	8.62
58106578	Pizza, with pepperoni, from school lunch, medium crust	9.22	9.22
58106580	Pizza with pepperoni, from school lunch, thick crust	9.82	9.82
58106610	Pizza with meat other than pepperoni, from restaurant or fast food, NS as to type of crust	12.35	12.35
58106620	Pizza with meat other than pepperoni, from restaurant or fast food, thin crust	17.71	17.71
58106625	Pizza with meat other than pepperoni, from restaurant or fast food, medium crust	12.35	12.35
58106630	Pizza with meat other than pepperoni, from restaurant or fast food, thick crust	12.94	12.94
58106633	Pizza, with meat other than pepperoni, stuffed crust	13.05	13.05
58106634	Pizza, with meat other than pepperoni, from school lunch, medium crust	8.45	8.45
58106635	Pizza, with meat other than pepperoni, from school lunch, thin crust	7.83	7.83
58106636	Pizza, with meat other than pepperoni, from school lunch, thick crust	9.07	9.07
58106650	Pizza with extra meat, thin crust	16.43	16.43
58106655	Pizza with extra meat, medium crust	12.40	12.40
58106660	Pizza with extra meat, thick crust	13.02	13.02
58106720	Pizza with meat and vegetables, from restaurant or fast food, thin crust	13.13	13.13
58106725	Pizza with meat and vegetables, from restaurant or fast food, medium crust	10.90	10.90
58106730	Pizza with meat and vegetables, from restaurant or fast food, thick crust	10.53	10.53
58106736	Pizza with extra meat and extra vegetables, thin crust	12.01	12.01
58106737	Pizza with extra meat and extra vegetables, thick crust	9.97	9.97
58106738	Pizza with extra meat and extra vegetables, medium crust	9.29	9.29
58106750	Pizza with meat and fruit, thin crust	11.51	11.51
58106755	Pizza with meat and fruit, medium crust	8.58	8.58
58106760	Pizza with meat and fruit, thick crust	9.53	9.53
58106820	Pizza with beans and vegetables, thin crust	9.48	9.48
58106830	Pizza with beans and vegetables, thick crust	8.18	8.18
58107050	Pizza, no cheese, thin crust	13.54	13.54
58107100	Pizza, no cheese, thick crust	12.07	12.07
58107205	White pizza, cheese, thin crust	13.67	13.67
58107207	White pizza, cheese, thick crust	11.41	11.41
58107212	White pizza, cheese, with vegetables, thin crust	11.69	11.69
58107214	White pizza, cheese, with vegetables, thick crust	10.14	10.14

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58107222	White pizza, cheese, with meat, thin crust	17.36	17.36
58107224	White pizza, cheese, with meat, thick crust	14.81	14.81
58107232	White pizza, cheese, with meat and vegetables, thin crust	15.32	15.32
58107234	White pizza, cheese, with meat and vegetables, thick crust	13.34	13.34
58108000	Calzone, with cheese, meatless	22.33	22.33
58108010	Calzone, with meat and cheese	17.49	17.49
58108050	Pizza rolls	10.50	10.50
58109015	Pizza, cheese, whole wheat thin crust	12.38	12.38
58109020	Pizza, cheese, whole wheat thick crust	10.40	10.40
58109030	Pizza, with meat, whole wheat thin crust	16.35	16.35
58109040	Pizza, with meat, whole wheat thick crust	13.98	13.98
58109050	Pizza, cheese and vegetables, whole wheat thin crust	10.64	10.64
58109060	Pizza, cheese and vegetables, whole wheat thick crust	9.29	9.29
58109100	Pizza, cheese, gluten-free thin crust	13.62	13.62
58109110	Pizza, cheese, gluten-free thick crust	11.88	11.88
58109120	Pizza, with meat, gluten-free thin crust	17.36	17.36
58109130	Pizza, with meat, gluten-free thick crust	15.23	15.23
58109140	Pizza, cheese and vegetables, gluten-free thin crust	11.64	11.64
58109150	Pizza, cheese and vegetables, gluten-free thick crust	10.52	10.52
58109210	Breakfast pizza with egg	14.44	14.44
58110110	Egg roll, meatless	14.14	14.14
58110120	Egg roll, with shrimp	14.14	14.14
58110130	Egg roll, with beef and/or pork	14.33	14.33
58110170	Egg roll, with chicken or turkey	11.82	11.82
58110200	Roll with meat and/or shrimp, vegetables and rice paper, not fried	2.63	2.63
58111110	Wonton, fried, filled with meat, poultry, or seafood,	11.13	11.13
58111120	Wonton, fried, meatless	11.13	11.13
58111130	Wonton, fried, filled with meat, poultry, or seafood, and vegetable	11.13	11.13
58111200	Puffs, fried, crab meat and cream cheese filled	15.22	15.22
58112510	Dumpling, steamed, filled with meat, poultry, or seafood	4.60	4.60
58115110	Tamale casserole, Puerto Rican style	9.78	9.78
58115150	Tamal in a leaf, Puerto Rican style	8.24	8.24
58115210	Taco with crab meat, Puerto Rican style	11.53	11.53
58116110	Meat turnover, Puerto Rican style	13.37	13.37
58116115	Empanada, Mexican turnover, filled with cheese and vegetables	16.53	16.53
58116120	Empanada, Mexican turnover, filled with meat and vegetables	18.37	18.37
58116130	Empanada, Mexican turnover, filled with chicken and vegetables	12.72	12.72
58116210	Meat pie, Puerto Rican style	33.20	33.20

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58116310	Cheese turnover, Puerto Rican style	25.23	25.23
58117110	Cornmeal fritter, Puerto Rican style	17.46	17.46
58117210	Cornmeal stick, Puerto Rican style	20.97	20.97
58117310	Kibby, Puerto Rican style	7.20	7.20
58117410	Codfish fritter, Puerto Rican style	7.62	7.62
58117510	Hayacas, Puerto Rican style	10.83	10.83
58118210	Cornmeal coconut dessert, Puerto Rican style	20.54	20.54
58120110	Crepe, filled with meat, poultry, or seafood, with sauce	9.95	9.95
58120120	Crepe, filled with meat, poultry, or seafood, no sauce	11.06	11.06
58121510	Dumpling, meat-filled	22.70	22.70
58121610	Dumpling, potato- or cheese-filled	6.14	6.14
58121620	Dumpling, vegetable	3.83	3.83
58122210	Gnocchi, cheese	11.86	11.86
58122220	Gnocchi, potato	6.17	6.17
58122250	Kishke, stuffed derma	33.02	33.02
58122310	Knish, potato	20.32	20.32
58122320	Knish, cheese	19.46	19.46
58122330	Knish, meat	21.28	21.28
58123110	Sweet bread dough, filled with meat, steamed	7.38	7.38
58124250	Spanakopitta	15.26	15.26
58125110	Quiche with meat, poultry or fish	30.70	30.70
58125120	Spinach quiche, meatless	23.53	23.53
58125180	Cheese quiche, meatless	29.32	29.32
58126000	Turnover filled with ground beef and cabbage	8.25	8.25
58126110	Turnover, meat-filled, no gravy	23.50	23.50
58126120	Turnover, meat-filled, with gravy	15.29	15.29
58126130	Turnover, meat- and cheese-filled, no gravy	9.14	9.14
58126140	Turnover, meat- and bean-filled, no gravy	21.17	21.17
58126150	Turnover, meat- and cheese-filled, tomato-based sauce	10.23	10.23
58126160	Turnover, cheese-filled, tomato-based sauce	10.86	10.86
58126170	Turnover filled with meat and vegetable, no potatoes, no gravy	18.77	18.77
58126180	Turnover, meat-, potato-, and vegetable-filled, no gravy	17.68	17.68
58126270	Turnover, chicken- or turkey-, and cheese-filled, no gravy	8.60	8.60
58126280	Turnover, chicken- or turkey-, and vegetable-filled, lower in fat	5.51	5.51
58126290	Turnover, meat- and cheese-filled, lower in fat	6.53	6.53
58126300	Turnover, meat- and cheese-filled, tomato-based sauce, lower in fat	5.51	5.51
58126400	Turnover, filled with egg, meat and cheese	12.60	12.60
58126410	Turnover, filled with egg, meat, and cheese, lower in fat	6.53	6.53
58127200	Croissant sandwich, filled with broccoli and cheese	15.32	15.32

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58127210	Croissant sandwich, filled with ham and cheese	17.07	17.07
58127270	Croissant sandwich with sausage and egg	21.44	21.44
58127290	Croissant sandwich with bacon and egg	20.47	20.47
58127310	Croissant sandwich with ham, egg, and cheese	14.95	14.95
58127330	Croissant sandwich with sausage, egg, and cheese	21.78	21.78
58127350	Croissant sandwich with bacon, egg, and cheese	16.40	16.40
58127500	Vegetable submarine sandwich, with fat free spread	1.97	1.97
58127510	Vegetable submarine sandwich, with spread	10.61	10.61
58128000	Biscuit with gravy	14.67	14.67
58128110	Chicken cornbread	8.14	8.14
58128120	Cornmeal dressing with chicken or turkey and vegetables	14.36	14.36
58128210	Dressing with oysters	10.75	10.75
58128220	Dressing with chicken or turkey and vegetables	11.17	11.17
58128250	Dressing with meat and vegetables	14.56	14.56
58130011	Lasagna with meat	4.97	4.97
58130013	Lasagna with meat, canned	3.41	3.41
58130014	Lasagna with meat, from restaurant	10.69	10.69
58130020	Lasagna with meat and spinach	10.77	10.77
58130140	Lasagna with chicken or turkey	10.36	10.36
58130150	Lasagna, with chicken or turkey, and spinach	10.13	10.13
58130310	Lasagna, meatless	5.33	5.33
58130320	Lasagna, meatless, with vegetables	9.36	9.36
58131100	Ravioli, NS as to filling, no sauce	6.76	6.76
58131110	Ravioli, NS as to filling, with tomato sauce	5.76	5.76
58131120	Ravioli, NS as to filling, with cream sauce	8.19	8.19
58131310	Ravioli, meat-filled, no sauce	7.23	7.23
58131320	Ravioli, meat-filled, with tomato sauce or meat sauce	6.13	6.13
58131323	Ravioli, meat-filled, with tomato sauce or meat sauce, canned	3.41	3.41
58131330	Ravioli, meat-filled, with cream sauce	8.63	8.63
58131510	Ravioli, cheese-filled, no sauce	6.01	6.01
58131520	Ravioli, cheese-filled, with tomato sauce	2.30	2.30
58131523	Ravioli, cheese-filled, with tomato sauce, canned	1.45	1.45
58131530	Ravioli, cheese-filled, with meat sauce	6.00	6.00
58131535	Ravioli, cheese-filled, with cream sauce	7.70	7.70
58131590	Ravioli, cheese and spinach-filled, no sauce	4.23	4.23
58131600	Ravioli, cheese and spinach-filled, with cream sauce	6.50	6.50
58131610	Ravioli, cheese and spinach filled, with tomato sauce	3.16	3.16
58133110	Manicotti, cheese-filled, no sauce	9.13	9.13
58133120	Manicotti, cheese-filled, with tomato sauce, meatless	6.47	6.47
58133130	Manicotti, cheese-filled, with meat sauce	7.16	7.16

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58133140	Manicotti, vegetable- and cheese-filled, with tomato sauce, meatless	5.04	5.04
58134110	Stuffed shells, cheese-filled, no sauce	8.32	8.32
58134120	Stuffed shells, cheese-filled, with tomato sauce, meatless	5.63	5.63
58134130	Stuffed shells, cheese-filled, with meat sauce	6.42	6.42
58134160	Stuffed shells, cheese- and spinach- filled, no sauce	6.39	6.39
58134210	Stuffed shells, with chicken, with tomato sauce	3.23	3.23
58134310	Stuffed shells, with fish and/or shellfish, with tomato sauce	1.81	1.81
58134610	Tortellini, meat-filled, with tomato sauce	4.98	4.98
58134613	Tortellini, meat-filled, with tomato sauce, canned	1.63	1.63
58134620	Tortellini, cheese-filled, meatless, with tomato sauce	3.65	3.65
58134623	Tortellini, cheese-filled, meatless, with tomato sauce, canned	1.50	1.50
58134640	Tortellini, cheese-filled, meatless, with vinaigrette dressing	10.25	10.25
58134650	Tortellini, meat-filled, no sauce	7.53	7.53
58134660	Tortellini, cheese-filled, with cream sauce	6.76	6.76
58134680	Tortellini, cheese-filled, no sauce	5.56	5.56
58134710	Tortellini, spinach-filled, with tomato sauce	4.34	4.34
58134720	Tortellini, spinach-filled, no sauce	7.16	7.16
58134810	Cannelloni, cheese- and spinach-filled, no sauce	6.34	6.34
58135110	Chow fun noodles with meat and vegetables	2.74	2.74
58135120	Chow fun noodles with vegetables, meatless	0.97	0.97
58136110	Lo mein, NFS	2.35	2.35
58136120	Lo mein, meatless	2.35	2.35
58136130	Lo mein, with shrimp	2.21	2.21
58136140	Lo mein, with pork	3.79	3.79
58136150	Lo mein, with beef	2.77	2.77
58136160	Lo mein, with chicken	3.15	3.15
58137210	Pad Thai, NFS	7.47	7.47
58137220	Pad Thai, meatless	9.17	9.17
58137230	Pad Thai with chicken	7.47	7.47
58137240	Pad Thai with seafood	6.78	6.78
58137250	Pad Thai with meat	7.89	7.89
58137300	Adobo, with noodles	7.66	7.66
58140110	Spaghetti with corned beef, Puerto Rican style	14.54	14.54
58140310	Macaroni with tuna, Puerto Rican style	4.67	4.67
58145110	Macaroni or noodles with cheese	10.41	10.41
58145111	Macaroni or noodles with cheese, from restaurant	6.06	6.06
58145112	Macaroni or noodles with cheese, made from packaged mix	7.97	7.97
58145113	Macaroni or noodles with cheese, canned	2.46	2.46
58145117	Macaroni or noodles with cheese, Easy Mac type	1.86	1.86

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58145119	Macaroni or noodles with cheese, made from reduced fat packaged mix	4.77	4.77
58145120	Macaroni or noodles with cheese and tuna	6.73	6.73
58145135	Macaroni or noodles with cheese and meat	11.12	11.12
58145136	Macaroni or noodles with cheese and meat, prepared from Hamburger Helper mix	7.53	7.53
58145140	Macaroni or noodles with cheese and tomato	6.48	6.48
58145160	Macaroni or noodles with cheese and frankfurters or hot dogs	12.49	12.49
58145170	Macaroni or noodles with cheese and egg	9.39	9.39
58145190	Macaroni or noodles with cheese and chicken or turkey	7.56	7.56
58145300	Macaroni or noodles with cheese, whole grain	10.79	10.79
58146120	Pasta with tomato-based sauce, cheese and meat	6.97	6.97
58146150	Pasta with tomato-based sauce and cheese	4.83	4.83
58146160	Pasta with vegetables, no sauce or dressing	3.54	3.54
58146210	Pasta with sauce, NFS	2.58	2.58
58146215	Pasta with sauce, meatless, school lunch	1.60	1.60
58146221	Pasta with tomato-based sauce, restaurant	7.97	7.97
58146223	Pasta with tomato-based sauce, ready-to-heat	2.98	2.98
58146301	Pasta with tomato-based sauce, and added vegetables, restaurant	7.85	7.85
58146303	Pasta with tomato-based sauce, and added vegetables, ready-to-heat	2.86	2.86
58146315	Pasta with sauce and meat, from school lunch	3.12	3.12
58146321	Pasta with tomato-based sauce and meat, restaurant	9.25	9.25
58146323	Pasta with tomato-based sauce and meat, ready-to-heat	4.34	4.34
58146331	Pasta with tomato-based sauce, meat, and added vegetables, restaurant	9.15	9.15
58146333	Pasta with tomato-based sauce, meat, and added vegetables, ready-to-heat	4.23	4.23
58146341	Pasta with tomato-based sauce and poultry, restaurant	8.42	8.42
58146343	Pasta with tomato-based sauce and poultry, ready-to-heat	3.46	3.46
58146351	Pasta with tomato-based sauce, poultry, and added vegetables, restaurant	8.33	8.33
58146353	Pasta with tomato-based sauce, poultry, and added vegetables, ready-to-heat	3.36	3.36
58146361	Pasta with tomato-based sauce and seafood, restaurant	7.97	7.97
58146363	Pasta with tomato-based sauce and seafood, ready-to-heat	2.98	2.98
58146371	Pasta with tomato-based sauce, seafood, and added vegetables, restaurant	7.87	7.87
58146373	Pasta with tomato-based sauce, seafood, and added vegetables, ready-to-heat	2.88	2.88
58146381	Pasta with cream sauce, restaurant	14.00	14.00

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58146383	Pasta with cream sauce, ready-to-heat	9.40	9.40
58146391	Pasta with cream sauce and added vegetables, restaurant	12.46	12.46
58146393	Pasta with cream sauce and added vegetables, ready-to-heat	7.77	7.77
58146401	Pasta with cream sauce and meat, restaurant	14.14	14.14
58146403	Pasta with cream sauce and meat, ready-to-heat	9.56	9.56
58146411	Pasta with cream sauce, meat, and added vegetables, restaurant	12.89	12.89
58146413	Pasta with cream sauce, meat, and added vegetables, ready-to-heat	8.22	8.22
58146421	Pasta with cream sauce and poultry, restaurant	13.32	13.32
58146423	Pasta with cream sauce and poultry, ready-to-heat	8.68	8.68
58146431	Pasta with cream sauce, poultry, and added vegetables, restaurant	12.06	12.06
58146433	Pasta with cream sauce, poultry, and added vegetables, ready-to-heat	7.35	7.35
58146441	Pasta with cream sauce and seafood, restaurant	12.87	12.87
58146443	Pasta with cream sauce and seafood, ready-to-heat	8.20	8.20
58146451	Pasta with cream sauce, seafood, and added vegetables, restaurant	11.61	11.61
58146453	Pasta with cream sauce, seafood, and added vegetables, ready-to-heat	6.87	6.87
58146601	Pasta, whole grain, with tomato-based sauce, restaurant	8.34	8.34
58146603	Pasta, whole grain, with tomato-based sauce, ready-to-heat	3.38	3.38
58146611	Pasta, whole grain, with tomato-based sauce and added vegetables, restaurant	8.22	8.22
58146613	Pasta, whole grain, with tomato-based sauce and added vegetables, ready-to-heat	3.25	3.25
58146621	Pasta, whole grain, with tomato-based sauce and meat, restaurant	9.62	9.62
58146623	Pasta, whole grain, with tomato-based sauce and meat, ready-to-heat	4.73	4.73
58146631	Pasta, whole grain, with tomato-based sauce, meat, and added vegetables, restaurant	9.53	9.53
58146633	Pasta, whole grain, with tomato-based sauce, meat, and added vegetables, ready-to-heat	4.63	4.63
58146641	Pasta, whole grain, with tomato-based sauce and poultry, restaurant	8.80	8.80
58146643	Pasta, whole grain, with tomato-based sauce and poultry, ready-to-heat	3.86	3.86
58146651	Pasta, whole grain, with tomato-based sauce, poultry, and added vegetables, restaurant	8.70	8.70
58146653	Pasta, whole grain, with tomato-based sauce, poultry, and added vegetables, ready-to-heat	3.76	3.76

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58146661	Pasta, whole grain, with tomato-based sauce and seafood, restaurant	8.34	8.34
58146663	Pasta, whole grain, with tomato-based sauce and seafood, ready-to-heat	3.38	3.38
58146671	Pasta, whole grain, with tomato-based sauce, seafood, and added vegetables, restaurant	8.25	8.25
58146673	Pasta, whole grain, with tomato-based sauce, seafood, and added vegetables, ready-to-heat	3.27	3.27
58146681	Pasta, whole grain, with cream sauce, restaurant	14.38	14.38
58146683	Pasta, whole grain, with cream sauce, ready-to-heat	9.80	9.80
58146691	Pasta, whole grain, with cream sauce, and added vegetables, restaurant	12.83	12.83
58146693	Pasta, whole grain, with cream sauce, and added vegetables, ready-to-heat	8.16	8.16
58146701	Pasta, whole grain, with cream sauce and meat, restaurant	14.52	14.52
58146703	Pasta, whole grain, with cream sauce and meat, ready-to-heat	9.95	9.95
58146711	Pasta, whole grain, with cream sauce, meat, and added vegetables, restaurant	13.26	13.26
58146713	Pasta, whole grain, with cream sauce, meat, and added vegetables, ready-to-heat	8.62	8.62
58146721	Pasta, whole grain, with cream sauce and poultry, restaurant	13.70	13.70
58146723	Pasta, whole grain, with cream sauce and poultry, ready-to-heat	9.08	9.08
58146731	Pasta, whole grain, with cream sauce, poultry, and added vegetables, restaurant	12.44	12.44
58146733	Pasta, whole grain, with cream sauce, poultry, and added vegetables, ready-to-heat	7.75	7.75
58146741	Pasta, whole grain, with cream sauce and seafood, restaurant	13.24	13.24
58146743	Pasta, whole grain, with cream sauce and seafood, ready-to-heat	8.60	8.60
58146751	Pasta, whole grain, with cream sauce, seafood, and added vegetables, restaurant	11.98	11.98
58146753	Pasta, whole grain, with cream sauce, seafood, and added vegetables, ready-to-heat	7.26	7.26
58147110	Pasta with tomato-based sauce and beans or lentils	2.28	2.28
58147330	Macaroni or noodles, creamed, with cheese	5.53	5.53
58147340	Macaroni or noodles, creamed, with cheese and tuna	4.55	4.55
58147510	Flavored pasta	2.21	2.21
58147520	Yat Ga Mein with meat, fish, or poultry	5.57	5.57
58148110	Macaroni or pasta salad, made with mayonnaise	11.52	11.52
58148111	Macaroni or pasta salad, made with light mayonnaise	4.16	4.16
58148112	Macaroni or pasta salad, made with mayonnaise-type salad dressing	4.01	4.01
58148113	Macaroni or pasta salad, made with light mayonnaise-type salad dressing	4.16	4.16

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58148114	Macaroni or pasta salad, made with Italian dressing	3.71	3.71
58148115	Macaroni or pasta salad, made with light Italian dressing	1.99	1.99
58148116	Macaroni or pasta salad, made with creamy dressing	6.61	6.61
58148117	Macaroni or pasta salad, made with light creamy dressing	2.91	2.91
58148118	Macaroni or pasta salad, made with any type of fat free dressing	1.14	1.14
58148120	Macaroni or pasta salad with egg	11.44	11.44
58148130	Macaroni or pasta salad with tuna	9.90	9.90
58148140	Macaroni or pasta salad with crab meat	9.90	9.90
58148150	Macaroni or pasta salad with shrimp	10.06	10.06
58148160	Macaroni or pasta salad with tuna and egg	9.96	9.96
58148170	Macaroni or pasta salad with chicken	10.75	10.75
58148180	Macaroni or pasta salad with cheese	14.43	14.43
58148550	Macaroni or pasta salad with meat	10.59	10.59
58149110	Noodle pudding	7.32	7.32
58150100	Bibimbap, Korean	2.88	2.88
58150110	Rice, fried, meatless	3.19	3.19
58150310	Rice, fried, NFS	3.19	3.19
58150320	Rice, fried, with chicken	3.66	3.66
58150330	Rice, fried, with pork	4.16	4.16
58150340	Rice, fried, with beef	4.06	4.06
58150510	Rice, fried, with shrimp	2.97	2.97
58150520	Dukboki or Tteokbokki, Korean	4.07	4.07
58150530	Adobo, with rice	7.94	7.94
58151100	Sushi, NFS	0.67	0.67
58151170	Sushi roll, avocado	1.47	1.47
58151180	Sushi roll, California	0.67	0.67
58151190	Sushi roll, eel	3.71	3.71
58151200	Sushi roll, salmon	1.28	1.28
58151210	Sushi roll, shrimp	0.55	0.55
58151220	Sushi roll tuna	0.26	0.26
58151230	Sushi roll, vegetable	1.47	1.47
58151400	Sushi, topped with crab	0.28	0.28
58151410	Sushi, topped with eel	5.20	5.20
58151420	Sushi, topped with salmon	1.74	1.74
58151430	Sushi, topped with shrimp	0.70	0.70
58151440	Sushi, topped with tuna	0.29	0.29
58151450	Sushi, topped with egg	5.00	5.00
58155110	Rice with chicken, Puerto Rican style	14.14	14.14
58155310	Paella with meat, Valenciana style	12.29	12.29
58155320	Seafood paella, Puerto Rican style	5.65	5.65

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58155410	Soupy rice with chicken, Puerto Rican style	4.05	4.05
58155510	Soupy rice mixture with chicken and potatoes, Puerto Rican style	4.27	4.27
58155610	Rice meal fritter, Puerto Rican style	14.03	14.03
58155810	Stewed rice, Puerto Rican style	7.80	7.80
58155910	Rice with squid, Puerto Rican style	11.82	11.82
58156110	Fried rice, Puerto Rican style	3.33	3.33
58156210	Rice with vienna sausage, Puerto Rican style	11.61	11.61
58156310	Rice with Spanish sausage, Puerto Rican style	13.59	13.59
58156410	Rice with onions, Puerto Rican style	9.75	9.75
58156710	Rice with stewed beans, Puerto Rican style	3.23	3.23
58157300	Congee, with meat, poultry, and/or seafood	0.94	0.94
58157310	Congee, with meat, poultry, and/or seafood, and vegetables	0.92	0.92
58157320	Congee, with vegetables	0.10	0.10
58160000	Biryani with vegetables	3.16	3.16
58160100	Beans and rice, from fast food / restaurant	6.99	6.99
58160102	Kidney beans and rice, from fast food / restaurant	7.07	7.07
58160104	Black beans and rice, from fast food / restaurant	7.09	7.09
58160106	Pinto beans and rice, from fast food / restaurant	7.15	7.15
58160110	Beans and white rice	4.21	4.21
58160120	Beans and rice, with tomatoes	3.46	3.46
58160132	Beans and rice, with meat	4.24	4.24
58160150	Kidney beans and white rice	4.29	4.29
58160154	Black beans and white rice	4.32	4.32
58160156	Pinto beans and white rice	4.38	4.38
58160400	Rice, white, with corn, NS as to fat	2.50	2.50
58160410	Rice, white, with corn, no added fat	0.38	0.38
58160420	Rice, white, with corn, fat added	2.50	2.50
58160430	Rice, white, with peas, NS as to fat	2.42	2.42
58160440	Rice, white, with peas, no added fat	0.28	0.28
58160450	Rice, white, with peas, fat added	2.42	2.42
58160460	Rice, white, with carrots, NS as to fat	2.42	2.42
58160470	Rice, white, with carrots, no added fat	0.25	0.25
58160480	Rice, white, with carrots, fat added	2.42	2.42
58160490	Rice, white, with peas and carrots, NS as to fat	2.47	2.47
58160500	Rice, white, with peas and carrots, no added fat	0.33	0.33
58160510	Rice, white, with peas and carrots, fat added	2.47	2.47
58160520	Rice, white, with tomatoes and/or tomato-based sauce, NS as to fat	2.18	2.18
58160530	Rice, white, with tomatoes and/or tomato-based sauce, no added fat	0.27	0.27

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58160540	Rice, white, with tomatoes and/or tomato-based sauce, fat added	2.18	2.18
58160550	Rice, white, with dark green vegetables, NS as to fat	2.46	2.46
58160560	Rice, white, with dark green vegetables, no added fat	0.30	0.30
58160570	Rice, white, with dark green vegetables, fat added	2.46	2.46
58160580	Rice, white, with carrots and tomatoes and/or tomato-based sauce, NS as to fat	2.29	2.29
58160590	Rice, white, with carrots and tomatoes and/or tomato-based sauce, no added fat	0.26	0.26
58160600	Rice, white, with carrots and tomatoes and/or tomato-based sauce, fat added	2.29	2.29
58160610	Rice, white, with dark green vegetables and tomatoes and/or tomato-based sauce, NS as to fat	2.32	2.32
58160620	Rice, white, with dark green vegetables and tomatoes and/or tomato-based sauce, no added fat	0.28	0.28
58160630	Rice, white, with dark green vegetables and tomatoes and/or tomato-based sauce, fat added	2.32	2.32
58160640	Rice, white, with carrots and dark green vegetables, NS as to fat	2.45	2.45
58160650	Rice, white, with carrots and dark green vegetables, no added fat	0.28	0.28
58160660	Rice, white, with carrots and dark green vegetables, fat added	2.45	2.45
58160670	Rice, white, with carrots, dark green vegetables, and tomatoes and/or tomato-based sauce, NS as to fat	2.28	2.28
58160680	Rice, white, with carrots, dark green vegetables, and tomatoes and/or tomato-based sauce, no added fat	0.28	0.28
58160690	Rice, white, with carrots, dark green vegetables, and tomatoes and/or tomato-based sauce, fat added	2.35	2.35
58160700	Rice, white, with other vegetables, NS as to fat	2.41	2.41
58160710	Rice, white, with other vegetables, no added fat	0.26	0.26
58160720	Rice, white, with other vegetables, fat added	2.41	2.41
58160800	Rice, white, with lentils, NS as to fat	4.83	4.83
58160805	Rice, white, with lentils, fat added	4.83	4.83
58160810	Rice, white, with lentils, no added fat	0.33	0.33
58161200	Rice, cooked with coconut milk	17.23	17.23
58161320	Beans and brown rice	4.49	4.49
58161321	Kidney beans and brown rice	4.57	4.57
58161322	Black beans and brown rice	4.59	4.59
58161323	Pinto beans and brown rice	4.65	4.65
58161420	Rice, brown, with corn, NS as to fat	2.71	2.71
58161422	Rice, brown, with corn, no added fat	0.90	0.90
58161424	Rice, brown, with corn, fat added	2.71	2.71
58161430	Rice, brown, with peas, NS as to fat	2.64	2.64
58161432	Rice, brown, with peas, no added fat	0.82	0.82

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58161434	Rice, brown, with peas, fat added	2.64	2.64
58161435	Rice, brown, with carrots, NS as to fat	2.63	2.63
58161437	Rice, brown, with carrots, no added fat	0.80	0.80
58161439	Rice, brown, with carrots, fat added	2.63	2.63
58161440	Rice, brown, with peas and carrots, NS as to fat	2.68	2.68
58161442	Rice, brown, with peas and carrots, no added fat	0.86	0.86
58161444	Rice, brown, with peas and carrots, fat added	2.68	2.68
58161460	Rice, brown, with tomatoes and/or tomato based sauce, NS as to fat	2.41	2.41
58161462	Rice, brown, with tomatoes and/or tomato based sauce, no added fat	0.76	0.76
58161464	Rice, brown, with tomatoes and/or tomato based sauce, fat added	2.41	2.41
58161470	Rice, brown, with dark green vegetables, NS as to fat	2.68	2.68
58161472	Rice, brown, with dark green vegetables, no added fat	0.84	0.84
58161474	Rice, brown, with dark green vegetables, fat added	2.68	2.68
58161480	Rice, brown, with carrots and tomatoes and/or tomato-based sauce, NS as to fat	2.51	2.51
58161482	Rice, brown, with carrots and tomatoes and/or tomato-based sauce, no added fat	0.78	0.78
58161484	Rice, brown, with carrots and tomatoes and/or tomato-based sauce, fat added	2.51	2.51
58161490	Rice, brown, with dark green vegetables and tomatoes and/or tomato-based sauce, NS as to fat	2.54	2.54
58161492	Rice, brown, with dark green vegetables and tomatoes and/or tomato-based sauce, no added fat	0.80	0.80
58161494	Rice, brown, with dark green vegetables and tomatoes and/or tomato-based sauce, fat added	2.46	2.46
58161500	Rice, brown, with carrots and dark green vegetables, NS as to fat	2.66	2.66
58161502	Rice, brown, with carrots and dark green vegetables, no added fat	0.82	0.82
58161504	Rice, brown, with carrots and dark green vegetables, fat added	2.66	2.66
58161510	Grape leaves stuffed with rice	11.95	11.95
58161520	Rice, brown, with carrots, dark green vegetables, and tomatoes and/or tomato-based sauce, NS as to fat	2.57	2.57
58161522	Rice, brown, with carrots, dark green vegetables, and tomatoes and/or tomato-based sauce, no added fat	0.80	0.80
58161524	Rice, brown, with carrots, dark green vegetables, and tomatoes and/or tomato-based sauce, fat added	2.57	2.57
58161530	Rice, brown, with other vegetables, NS as to fat	2.63	2.63
58161532	Rice, brown, with other vegetables, no added fat	0.80	0.80
58161534	Rice, brown, with other vegetables, fat added	2.63	2.63
58161710	Rice croquette	6.53	6.53

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58162090	Stuffed pepper, with meat	15.90	15.90
58162110	Stuffed pepper, with rice and meat	11.65	11.65
58162120	Stuffed pepper, with rice, meatless	11.31	11.31
58162130	Stuffed tomato, with rice and meat	4.54	4.54
58162140	Stuffed tomato, with rice, meatless	2.16	2.16
58162310	Rice pilaf	3.03	3.03
58163130	Dirty rice	2.25	2.25
58163310	Flavored rice mixture	4.26	4.26
58163330	Flavored rice mixture with cheese	1.20	1.20
58163360	Flavored rice, brown and wild	2.14	2.14
58163380	Flavored rice and pasta mixture	3.49	3.49
58163400	Flavored rice and pasta mixture, reduced sodium	3.42	3.42
58163405	Spanish rice, from restaurant	5.29	5.29
58163410	Spanish rice, fat added	2.61	2.61
58163420	Spanish rice, no added fat	1.01	1.01
58163430	Spanish rice, NS as to fat	2.61	2.61
58163450	Spanish rice with ground beef	6.91	6.91
58163510	Rice dressing	3.30	3.30
58164110	Rice with raisins	2.58	2.58
58164210	Rice dessert or salad with fruit	7.30	7.30
58164500	Rice, white, with cheese and/or cream based sauce, NS as to fat	7.03	7.03
58164510	Rice, white, with cheese and/or cream based sauce, no added fat	5.22	5.22
58164520	Rice, white, with cheese and/or cream based sauce, fat added	7.03	7.03
58164530	Rice, white, with gravy, NS as to fat	2.96	2.96
58164540	Rice, white, with gravy, no added fat	1.06	1.06
58164550	Rice, white, with gravy, fat added	2.96	2.96
58164560	Rice, white, with soy-based sauce, NS as to fat	2.19	2.19
58164570	Rice, white, with soy-based sauce, no added fat	0.28	0.28
58164580	Rice, white, with soy-based sauce, fat added	2.19	2.19
58164800	Rice, brown, with cheese and/or cream based sauce, NS as to fat	6.62	6.62
58164810	Rice, brown, with cheese and/or cream based sauce, no added fat	5.04	5.04
58164820	Rice, brown, with cheese and/or cream based sauce, fat added	6.62	6.62
58164830	Rice, brown, with gravy, NS as to fat	3.08	3.08
58164840	Rice, brown, with gravy, no added fat	1.44	1.44
58164850	Rice, brown, with gravy, fat added	3.08	3.08
58164860	Rice, brown, with soy-based sauce, NS as to fat	2.42	2.42
58164870	Rice, brown, with soy-based sauce, no added fat	0.77	0.77
58164880	Rice, brown, with soy-based sauce, fat added	2.42	2.42

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58165000	Rice, white, with vegetables, cheese and/or cream based sauce, NS as to fat	5.66	5.66
58165010	Rice, white, with vegetables, cheese and/or cream based sauce, no added fat	4.20	4.20
58165020	Rice, white, with vegetables, cheese and/or cream based sauce, fat added	5.66	5.66
58165030	Rice, white, with vegetables and gravy, NS as to fat	2.40	2.40
58165040	Rice, white, with vegetables and gravy, no added fat	0.88	0.88
58165050	Rice, white, with vegetables and gravy, fat added	2.40	2.40
58165060	Rice, white, with vegetables, soy-based sauce, NS as to fat	1.79	1.79
58165070	Rice, white, with vegetables, soy-based sauce, no added fat	0.26	0.26
58165080	Rice, white, with vegetables, soy-based sauce, fat added	1.79	1.79
58165400	Rice, brown, with vegetables, cheese and/or cream based sauce, NS as to fat	5.47	5.47
58165410	Rice, brown, with vegetables, cheese and/or cream based sauce, no added fat	4.17	4.17
58165420	Rice, brown, with vegetables, cheese and/or cream based sauce, fat added	5.47	5.47
58165430	Rice, brown, with vegetables and gravy, NS as to fat	2.56	2.56
58165440	Rice, brown, with vegetables and gravy, no added fat	1.21	1.21
58165450	Rice, brown, with vegetables and gravy, fat added	2.56	2.56
58165460	Rice, brown, with vegetables, soy-based sauce, NS as to fat	2.02	2.02
58165470	Rice, brown, with vegetables, soy-based sauce, no added fat	0.66	0.66
58165480	Rice, brown, with vegetables, soy-based sauce, fat added	2.02	2.02
58174000	Upma, Indian breakfast dish	2.64	2.64
58174100	Dosa (Indian), with filling	4.27	4.27
58175000	Vada, fried dumpling	9.73	9.73
58175110	Tabbouleh	9.66	9.66
58200250	Wrap sandwich, filled with vegetables	6.35	6.35
Grain-Based Patties			
52207010	Corn flour patty or tart, fried	4.64	4.64
Gravies and Sauces			
White Sauces and Milk Gravies			
13411000	White sauce or gravy	9.96	9.96
14630100	Cheese fondue	21.20	21.20
14650100	Cheese sauce	13.02	13.02
14650160	Alfredo sauce	15.12	15.12
14650165	Alfredo sauce with added vegetables	11.64	11.64
14650170	Alfredo sauce with meat	15.44	15.44
14650175	Alfredo sauce with meat and added vegetables	12.61	12.61
14650180	Alfredo sauce with poultry	13.59	13.59

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
14650185	Alfredo sauce with poultry and added vegetables	10.76	10.76
14650190	Alfredo sauce with seafood	12.56	12.56
14650195	Alfredo sauce with seafood and added vegetables	9.74	9.74
42204100	Gravy, vegetarian	9.96	9.96
89901010	Cream sauce, for use with vegetables	14.38	14.38
89901020	Cheese sauce, for use with vegetables	6.80	6.80
Hard Candy			
Hard Candy			
91718000	Honey-combed hard candy with peanut butter	20.18	20.18
91718050	Honey-combed hard candy with peanut butter, chocolate covered	23.98	23.98
91745020	Hard candy	0.20	0.20
91745040	Butterscotch hard candy	3.30	3.30
Foods for Infants and Young Children 1 through 3 Years of Age			
Cereal, Baby Food			
56210000	Cereal, nestum	1.09	1.09
57801000	Barley cereal, baby food, dry, instant	6.60	6.60
57803000	Mixed cereal, baby food, dry, instant	6.66	6.66
57804000	Oatmeal cereal, baby food, dry, instant	6.36	6.36
57805000	Rice cereal, baby food, dry, instant	2.19	2.19
57805080	Rice cereal with apples, baby food, dry, instant	2.40	2.40
57805090	Rice cereal with mixed fruits, baby food, dry, instant	0.90	0.90
57805100	Rice cereal with bananas, baby food, dry, instant	4.20	4.20
57805500	Brown rice cereal, baby food, dry, instant	3.00	3.00
57806000	Mixed cereal with bananas, baby food, dry, instant	4.60	4.60
57806050	Multigrain, whole grain cereal, baby food, dry, instant	6.67	6.67
57806100	Oatmeal cereal with bananas, baby food, dry, instant	6.67	6.67
57806200	Oatmeal cereal with fruit, baby food, dry, instant, toddler	7.05	7.05
57807010	Whole wheat cereal with apples, baby food, dry, instant	4.80	4.80
57820000	Cereal, baby food, jarred, NFS	0.89	0.89
57820100	Rice cereal, baby food, jarred, NFS	0.40	0.40
57822000	Mixed cereal with applesauce and bananas, baby food, jarred	0.51	0.51
57823000	Oatmeal with applesauce and bananas, baby food, jarred	0.89	0.89
57824000	Rice cereal with applesauce and bananas, baby food, jarred	0.40	0.40
57824500	Rice cereal with mixed fruit, baby food, jarred	0.40	0.40
57830100	Gerber Graduates Finger Snacks Cereal, baby food	9.90	9.90
Milk Desserts, Baby Food			
13310000	Custard pudding, flavor other than chocolate, baby food, NS as to strained or junior	1.49	1.49
13311000	Custard pudding, baby food, flavor other than chocolate, strained	2.00	2.00

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
13312000	Custard pudding, baby food, flavor other than chocolate, junior	0.98	0.98
Fruits and Fruit Mixtures, Baby Food			
67100100	Fruit, baby food, NFS	0.20	0.20
67100110	Fruit bar, with added vitamin C, baby food, toddler	2.24	2.24
67100200	Tropical fruit medley, baby food, strained	0.14	0.14
67100300	Apples, baby food, toddler	0.36	0.36
67101000	Apple-raspberry, baby food, NS as to strained or junior	0.20	0.20
67101010	Apple-raspberry, baby food, strained	0.20	0.20
67101020	Apple-raspberry, baby food, junior	0.20	0.20
67102000	Applesauce, baby food, NS as to strained or junior	0.10	0.10
67102010	Applesauce, baby food, strained	0.20	0.20
67104000	Applesauce and apricots, baby food, NS as to strained or junior	0.20	0.20
67104010	Applesauce and apricots, baby food, strained	0.20	0.20
67104020	Applesauce and apricots, baby food, junior	0.20	0.20
67104030	Applesauce with bananas, baby food, NS as to strained or junior	0.10	0.10
67104040	Applesauce with bananas, baby food, strained	0.10	0.10
67104060	Applesauce with bananas, baby food, junior	0.10	0.10
67105030	Bananas, baby food, strained	0.20	0.20
67106010	Bananas with apples and pears, baby food, strained	0.22	0.22
67106050	Banana with mixed berries, baby food, strained	0.36	0.36
67108000	Peaches, baby food, NS as to strained or junior	0.33	0.33
67108010	Peaches, baby food, strained	0.33	0.33
67108020	Peaches, baby food, junior	0.33	0.33
67108030	Peaches, baby food, toddler	0.20	0.20
67109000	Pears, baby food, NS as to strained or junior	0.15	0.15
67109010	Pears, baby food, strained	0.20	0.20
67109020	Pears, baby food, junior	0.10	0.10
67109030	Pears, baby food, toddler	0.10	0.10
67110000	Prunes, baby food, strained	0.20	0.20
67113000	Apples and pears, baby food, NS as to strained or junior	0.12	0.12
67113010	Apples and pears, baby food, strained	0.20	0.20
67113020	Apples and pears, baby food, junior	0.05	0.05
67114000	Pears and pineapple, baby food, NS as to strained or junior	0.15	0.15
67114010	Pears and pineapple, baby food, strained	0.10	0.10
67114020	Pears and pineapple, baby food, junior	0.20	0.20
67304030	Plums, bananas, and rice, baby food strained	0.30	0.30
67304500	Prunes with oatmeal, baby food, strained	0.10	0.10
67308000	Bananas, baby food, NS as to strained or junior	0.15	0.15
67308020	Bananas, baby food, junior	0.20	0.20
67309000	Bananas and pineapple, baby food, NS as to strained or junior	0.05	0.05

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
67309020	Bananas and pineapple, baby food, junior	0.10	0.10
67309030	Bananas and strawberry, baby food, junior	0.37	0.37
67501000	Apples and chicken, baby food, strained	1.38	1.38
67501100	Apples with ham, baby food, strained	0.90	0.90
67600100	Apples and sweet potatoes, baby food, strained	0.22	0.22
Fruit Juices, Baby Food			
67202000	Apple juice, baby food	0.10	0.10
67202010	Apple juice, with added calcium, baby food	0.10	0.10
67203000	Apple-fruit juice blend, baby food	0.10	0.10
67203200	Apple-banana juice, baby food	0.10	0.10
67203400	Apple-cherry juice, baby food	0.10	0.10
67203500	Apple-grape juice, baby food	0.20	0.20
67203600	Apple-peach juice, baby food	0.10	0.10
67203700	Apple-prune juice, baby food	0.10	0.10
67204000	Mixed fruit juice, not citrus, baby food	0.10	0.10
67204100	Mixed fruit juice, not citrus, with added calcium, baby food	0.10	0.10
67205000	Orange juice, baby food	0.30	0.30
67211000	Orange-apple-banana juice, baby food	0.10	0.10
67230000	Apple-sweet potato juice, baby food	0.10	0.10
67230500	Orange-carrot juice, baby food	0.10	0.10
67250100	Banana juice with lowfat yogurt, baby food	0.80	0.80
67250150	Mixed fruit juice with lowfat yogurt, baby food	0.80	0.80
Fruit Desserts and Fruit-flavored Puddings, Baby Food			
67404050	Fruit Supreme dessert, baby food	0.20	0.20
67404070	Apple yogurt dessert, baby food, strained	1.60	1.60
67404110	Banana apple dessert, baby food, strained	0.20	0.20
67404300	Blueberry yogurt dessert, baby food, strained	0.70	0.70
67404500	Mixed fruit yogurt dessert, baby food, strained	0.80	0.80
67404550	Cherry cobbler, baby food, junior	0.10	0.10
67408010	Banana pudding, baby food, strained	0.80	0.80
67408500	Banana yogurt dessert, baby food, strained	0.52	0.52
67410000	Cherry vanilla pudding, baby food, strained	0.25	0.25
67412000	Dutch apple dessert, baby food, NS as to strained or junior	0.28	0.28
67412010	Dutch apple dessert, baby food, strained	0.40	0.40
67412020	Dutch apple dessert, baby food, junior	0.16	0.16
67413700	Peach yogurt dessert, baby food, strained	0.18	0.18
67414010	Pineapple dessert, baby food, strained	0.30	0.30
67414100	Mango dessert, baby food	0.20	0.20
67415000	Tutti-fruitti pudding, baby food, NS as to strained or junior	0.35	0.35
67415010	Tutti-fruitti pudding, baby food, strained	0.30	0.30

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
67415020	Tutti-fruitti pudding, baby food, junior	0.40	0.40
67430000	Fruit flavored snack, baby food	0.02	0.02
67430500	Yogurt and fruit snack, baby food	4.00	4.00
Vegetable and Vegetable Mixtures, Baby Food			
76102010	Spinach, creamed, baby food, strained	1.30	1.30
76102030	Broccoli, carrots and cheese, baby food, junior	2.18	2.18
76201000	Carrots, baby food, NS as to strained or junior	0.15	0.15
76201010	Carrots, baby food, strained	0.10	0.10
76201020	Carrots, baby food, junior	0.20	0.20
76201030	Carrots, baby food, toddler	0.30	0.30
76202000	Carrots and peas, baby food, strained	0.26	0.26
76205000	Squash, baby food, NS as to strained or junior	0.20	0.20
76205010	Squash, baby food, strained	0.20	0.20
76205020	Squash, baby food, junior	0.20	0.20
76205030	Squash and corn, baby food, strained	0.60	0.60
76205060	Corn and sweet potatoes, baby food, strained	0.28	0.28
76209000	Sweet potatoes, baby food, NS as to strained or junior	0.10	0.10
76209010	Sweet potatoes, baby food, strained	0.10	0.10
76209020	Sweet potatoes, baby food, junior	0.10	0.10
76401000	Beans, green string, baby food, NS as to strained or junior	0.14	0.14
76401010	Beans, green string, baby food, strained	0.17	0.17
76401020	Beans, green string, baby food, junior	0.10	0.10
76401060	Beans, green string, baby food, toddler	0.20	0.20
76402000	Green beans and potatoes, baby food, strained	1.90	1.90
76403010	Beets, baby food, strained	0.10	0.10
76405000	Corn, creamed, baby food, NS as to strained or junior	0.40	0.40
76405010	Corn, creamed, baby food, strained	0.40	0.40
76405020	Corn, creamed, baby food, junior	0.40	0.40
76407000	Mixed vegetables, garden vegetables, baby food, NS as to strained or junior	0.30	0.30
76407010	Mixed vegetables, garden vegetables, baby food, strained	0.11	0.11
76407020	Mixed vegetables, garden vegetables, baby food, junior	0.40	0.40
76409000	Peas, baby food, NS as to strained or junior	0.43	0.43
76409010	Peas, baby food, strained	0.43	0.43
76409020	Peas, baby food, junior	0.43	0.43
76409030	Peas, baby food, toddler	0.80	0.80
76420000	Potatoes, baby food, toddler	0.10	0.10
76501000	Vegetables and rice, baby food, strained	1.50	1.50
76502000	Peas and brown rice, baby food	0.50	0.50
76602000	Carrots and beef, baby food, strained	2.50	2.50

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
76603000	Vegetable and beef, baby food, NS as to strained or junior	3.60	3.60
76603010	Vegetable and beef, baby food, strained	3.60	3.60
76603020	Vegetable and beef, baby food, junior	3.60	3.60
76604000	Broccoli and chicken, baby food, strained	2.48	2.48
76604500	Sweet potatoes and chicken, baby food, strained	2.17	2.17
76605000	Vegetable and chicken, baby food, NS as to strained or junior	1.42	1.42
76605010	Vegetable and chicken, baby food, strained	1.73	1.73
76605020	Vegetable and chicken, baby food, junior	1.12	1.12
76607100	Potatoes with cheese and broccoli, baby food, toddler	1.47	1.47
76611000	Vegetable and turkey, baby food, NS as to strained or junior	1.32	1.32
76611010	Vegetable and turkey, baby food, strained	0.90	0.90
76611020	Vegetable and turkey, baby food, junior	1.74	1.74
Cookies, Bars, and Nonsweet Crackers, Baby Foods			
53801000	Cereal bar with fruit filling, baby food	5.30	5.30
53803050	Cookie, fruit, baby food	12.60	12.60
53803100	Cookie, baby food	13.20	13.20
53803250	Cookie, teething, baby	4.20	4.20
53803300	Cookie, rice, baby	0.87	0.87
54350000	Crackers, baby food	19.60	19.60
54350010	Gerber Finger Foods, Puffs, baby food	9.90	9.90
54350020	Finger Foods, Puffs, baby food	2.30	2.30
54360000	Crunchy snacks, corn based, baby food	28.57	28.57
54408100	Pretzel, baby food	2.00	2.00
Grain Mixtures, Baby Food			
58503000	Macaroni, tomatoes, and beef, baby food, NS as to strained or junior	1.28	1.28
58503010	Macaroni, tomatoes, and beef, baby food, strained	1.47	1.47
58503020	Macaroni, tomatoes, and beef, baby food, junior	1.10	1.10
58503050	Macaroni with beef and tomato sauce, baby food, toddler	1.90	1.90
58508000	Macaroni and cheese, baby food, strained	2.06	2.06
58508300	Macaroni and cheese, baby food, toddler	2.60	2.60
58509020	Spaghetti, tomato sauce, and beef, baby food, junior	1.37	1.37
58509100	Ravioli, cheese-filled, with tomato sauce, baby food, toddler	2.20	2.20
58509200	Macaroni with vegetables, baby food, strained	2.10	2.10
Milk Products			
Flavored Milk and Milk Drinks			
11512010	Hot chocolate / Cocoa, ready to drink	0.06	0.06
11512020	Hot chocolate / Cocoa, ready to drink, made with nonfat milk	0.06	0.06
11512100	Hot chocolate / Cocoa, ready to drink, with whipped cream	0.06	0.06

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
11512110	Hot chocolate / Cocoa, ready to drink, made with nonfat milk and whipped cream	0.06	0.06
11513000	Chocolate milk, made from dry mix, NS as to type of milk	0.22	0.22
11513100	Chocolate milk, made from dry mix with whole milk	0.22	0.22
11513150	Chocolate milk, made from dry mix with reduced fat milk	0.22	0.22
11513200	Chocolate milk, made from dry mix with low fat milk	0.22	0.22
11513300	Chocolate milk, made from dry mix with fat free milk	0.22	0.22
11513350	Chocolate milk, made from reduced sugar mix, NS as to type of milk	0.27	0.27
11513355	Chocolate milk, made from reduced sugar mix with whole milk	0.27	0.27
11513360	Chocolate milk, made from reduced sugar mix with reduced fat milk	0.27	0.27
11513365	Chocolate milk, made from reduced sugar mix with low fat milk	0.27	0.27
11513370	Chocolate milk, made from reduced sugar mix with fat free milk	0.27	0.27
11513380	Chocolate milk, made from dry mix, NS as to type of milk (Nesquik)	0.22	0.22
11513381	Chocolate milk, made from dry mix with whole milk (Nesquik)	0.22	0.22
11513382	Chocolate milk, made from dry mix with reduced fat milk (Nesquik)	0.22	0.22
11513383	Chocolate milk, made from dry mix with low fat milk (Nesquik)	0.22	0.22
11513384	Chocolate milk, made from dry mix with fat free milk (Nesquik)	0.22	0.22
11513390	Chocolate milk, made from no sugar added dry mix, NS as to type of milk (Nesquik)	0.27	0.27
11513391	Chocolate milk, made from no sugar added dry mix with whole milk (Nesquik)	0.27	0.27
11513392	Chocolate milk, made from no sugar added dry mix with reduced fat milk (Nesquik)	0.27	0.27
11513393	Chocolate milk, made from no sugar added dry mix with low fat milk (Nesquik)	0.27	0.27
11513394	Chocolate milk, made from no sugar added dry mix with fat free milk (Nesquik)	0.27	0.27
11513400	Chocolate milk, made from syrup, NS as to type of milk	0.07	0.07
11513500	Chocolate milk, made from syrup with whole milk	0.07	0.07
11513550	Chocolate milk, made from syrup with reduced fat milk	0.07	0.07
11513600	Chocolate milk, made from syrup with low fat milk	0.07	0.07
11513700	Chocolate milk, made from syrup with fat free milk	0.07	0.07
11513800	Chocolate milk, made from light syrup, NS as to type of milk	0.19	0.19
11513801	Chocolate milk, made from light syrup with whole milk	0.19	0.19
11513802	Chocolate milk, made from light syrup with reduced fat milk	0.19	0.19
11513803	Chocolate milk, made from light syrup with low fat milk	0.19	0.19
11513804	Chocolate milk, made from light syrup with fat free milk	0.19	0.19
11513850	Chocolate milk, made from sugar free syrup, NS as to type of milk	0.32	0.32

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
11513851	Chocolate milk, made from sugar free syrup with whole milk	0.32	0.32
11513852	Chocolate milk, made from sugar free syrup with reduced fat milk	0.32	0.32
11513853	Chocolate milk, made from sugar free syrup with low fat milk	0.32	0.32
11513854	Chocolate milk, made from sugar free syrup with fat free milk	0.32	0.32
11514100	Hot chocolate / Cocoa, made with dry mix and water	0.55	0.55
11514110	Hot chocolate / Cocoa, made with dry mix and whole milk	0.60	0.60
11514120	Hot chocolate / Cocoa, made with dry mix and reduced fat milk	0.60	0.60
11514130	Hot chocolate / Cocoa, made with dry mix and low fat milk	0.60	0.60
11514140	Hot chocolate / Cocoa, made with dry mix and fat free milk	0.60	0.60
11514310	Hot chocolate / Cocoa, made with no sugar added dry mix and water	0.25	0.25
11514320	Hot chocolate / Cocoa, made with no sugar added dry mix and whole milk	0.32	0.32
11514330	Hot chocolate / Cocoa, made with no sugar added dry mix and reduced fat milk	0.32	0.32
11514340	Hot chocolate / Cocoa, made with no sugar added dry mix and low fat milk	0.32	0.32
11514350	Hot chocolate / Cocoa, made with no sugar added dry mix and fat free milk	0.32	0.32
11519040	Strawberry milk, NFS	0.09	0.09
11519050	Strawberry milk, whole	0.09	0.09
11519105	Strawberry milk, reduced fat	0.09	0.09
11519200	Strawberry milk, low fat	0.09	0.09
11519205	Strawberry milk, fat free	0.09	0.09
11519210	Strawberry milk, reduced sugar	0.09	0.09
11526000	Milk, malted	1.91	1.91
11531000	Eggnog	4.19	4.19
11541400	Milk shake with malt	6.11	6.11
11542100	Milk shake, fast food, chocolate	6.66	6.66
11542200	Milk shake, fast food, flavors other than chocolate	6.52	6.52
11543000	Milk shake, bottled, chocolate	6.66	6.66
11543010	Milk shake, bottled, flavors other than chocolate	6.52	6.52
11551050	Licuado or Batido	1.38	1.38
11553100	Fruit smoothie, NFS	1.07	1.07
11553110	Fruit smoothie, with whole fruit and dairy	1.07	1.07
11553120	Fruit smoothie, with whole fruit and dairy, added protein	1.21	1.21
11553130	Fruit smoothie juice drink, with dairy	0.14	0.14
11560000	Chocolate milk drink	0.40	0.40
11830150	Cocoa powder, not reconstituted	13.70	13.70
11830160	Chocolate beverage powder, dry mix, not reconstituted	2.27	2.27

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
11830165	Chocolate beverage powder, light, dry mix, not reconstituted	4.50	4.50
11830400	Strawberry beverage powder, dry mix, not reconstituted	0.20	0.20
Milk-Based Meal Replacements			
95101000	Nutritional drink or shake, ready-to-drink (Boost)	1.69	1.69
95101010	Nutritional drink or shake, ready-to-drink (Boost Plus)	5.38	5.38
95102000	Nutritional drink or shake, ready-to-drink (Carnation Instant Breakfast)	1.92	1.92
95103000	Nutritional drink or shake, ready-to-drink (Ensure)	2.53	2.53
95103010	Nutritional drink or shake, ready-to-drink (Ensure Plus)	4.52	4.52
95104000	Nutritional drink or shake, ready-to-drink, sugar free (Glucerna)	3.08	3.08
95105000	Nutritional drink or shake, ready-to-drink (Kellogg's Special K Protein)	1.60	1.60
95106000	Nutritional drink or shake, ready-to-drink (Muscle Milk)	2.17	2.17
95106010	Nutritional drink or shake, ready-to-drink, light (Muscle Milk)	1.15	1.15
95110000	Nutritional drink or shake, ready-to-drink (Slim Fast)	1.93	1.93
95110010	Nutritional drink or shake, ready-to-drink, sugar free (Slim Fast)	1.93	1.93
95110020	Nutritional drink or shake, high protein, ready-to-drink (Slim Fast)	3.38	3.38
95120000	Nutritional drink or shake, ready-to-drink, NFS	2.53	2.53
95120010	Nutritional drink or shake, high protein, ready-to-drink, NFS	3.38	3.38
95120020	Nutritional drink or shake, high protein, light, ready-to-drink, NFS	5.38	5.38
95201000	Nutritional powder mix (Carnation Instant Breakfast)	1.40	1.40
95201010	Nutritional powder mix, sugar free (Carnation Instant Breakfast)	5.10	5.10
95201200	Nutritional powder mix (EAS Whey Protein Powder)	5.13	5.13
95201500	Nutritional powder mix, high protein (Herbalife)	10.71	10.71
95201600	Nutritional powder mix (Isopure)	1.16	1.16
95201700	Nutritional powder mix (Kellogg's Special K20 Protein Water)	0.60	0.60
95202000	Nutritional powder mix (Muscle Milk)	17.14	17.14
95202010	Nutritional powder mix, light (Muscle Milk)	12.00	12.00
95210000	Nutritional powder mix (Slim Fast)	13.34	13.34
95210010	Nutritional powder mix, sugar free (Slim Fast)	13.34	13.34
95210020	Nutritional powder mix, high protein (Slim Fast)	13.46	13.46
95220000	Nutritional powder mix, NFS	1.40	1.40
95220010	Nutritional powder mix, high protein, NFS	10.71	10.71
95230000	Nutritional powder mix, whey based, NFS	1.56	1.56
95230020	Nutritional powder mix, protein, light, NFS	12.00	12.00
95230030	Nutritional powder mix, protein, NFS	1.56	1.56
Snack Dips			
11440010	Chipotle dip, yogurt based	15.99	15.99
11440020	Dill dip, yogurt based	16.03	16.03
11440030	Onion dip, yogurt based	12.88	12.88

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
11440040	Ranch dip, yogurt based	16.09	16.09
11440050	Spinach dip, yogurt based	12.94	12.94
11440060	Tzatziki dip	6.31	6.31
11440070	Vegetable dip, yogurt based	16.03	16.03
12350010	Dip, NFS	45.84	45.84
12350200	Chipotle dip, regular	45.74	45.74
12350205	Chipotle dip, light	15.15	15.15
12350210	Dill dip, regular	45.78	45.78
12350215	Dill dip, light	15.19	15.19
12350220	Onion dip, regular	36.27	36.27
12350225	Onion dip, light	12.34	12.34
12350230	Ranch dip, regular	45.84	45.84
12350235	Ranch dip, light	15.25	15.25
12350240	Spinach dip, regular	36.33	36.33
12350245	Spinach dip, light	12.39	12.39
12350250	Vegetable dip, regular	45.78	45.78
12350255	Vegetable dip, light	15.19	15.19
14620110	Artichoke dip	33.12	33.12
14620115	Spinach and artichoke dip	33.21	33.21
14620130	Seafood dip	33.25	33.25
Plant Protein Products			
Meat analogs			
41810200	Bacon strip, meatless	29.52	29.52
41810250	Bacon bits	25.90	25.90
41810400	Breakfast link, pattie, or slice, meatless	18.16	18.16
41810600	Chicken, meatless, NFS	12.73	12.73
41810610	Chicken, meatless, breaded, fried	12.77	12.77
41811400	Frankfurter or hot dog, meatless	13.73	13.73
41811600	Luncheon slice, meatless-beef, chicken, salami or turkey	11.11	11.11
41811800	Meatball, meatless	9.00	9.00
41811890	Vegetarian burger or patty, meatless, no bun	6.30	6.30
41811950	Swiss steak, with gravy, meatless	8.07	8.07
41812000	Sandwich spread, meat substitute type	9.00	9.00
41812600	Vegetarian, fillet	18.00	18.00
59003000	Meat substitute, cereal- and vegetable protein-based, fried	7.04	7.04
Soups and Soup Mixes			
Grain Based Soups			
58400000	Soup, NFS	0.78	0.78
58400100	Noodle soup, NFS	2.68	2.68
58400200	Rice soup, NFS	0.78	0.78

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
58401010	Barley soup, home recipe, canned, or ready-to-serve	0.96	0.96
58401200	Barley soup, sweet, with or without nuts, Asian Style	1.57	1.57
58402010	Beef noodle soup, canned or ready-to-serve	1.25	1.25
58402020	Beef dumpling soup, home recipe, canned or ready-to-serve	1.11	1.11
58402030	Beef rice soup, home recipe, canned or ready-to-serve	1.11	1.11
58403010	Chicken or turkey noodle soup, canned or ready-to-serve	0.78	0.78
58403050	Chicken or turkey noodle soup, cream of, home recipe, canned, or ready-to-serve	1.77	1.77
58403060	Chicken or turkey noodle soup, reduced sodium, canned or ready-to-serve	1.34	1.34
58403100	Noodle and potato soup, Puerto Rican style	0.12	0.12
58404010	Chicken or turkey rice soup, canned, or ready-to-serve	0.78	0.78
58404040	Chicken or turkey rice soup, reduced sodium, canned, prepared with water or ready-to-serve	0.60	0.60
58404050	Chicken or turkey rice soup, reduced sodium, canned, prepared with milk	1.60	1.60
58404100	Rice and potato soup, Puerto Rican style	2.09	2.09
58404500	Matzo ball soup	2.05	2.05
58404510	Chicken or turkey soup with dumplings and potatoes, home recipe, canned, or ready-to-serve	1.16	1.16
58404520	Chicken or turkey soup with dumplings, home recipe, canned or ready-to-serve	1.16	1.16
58407010	Instant soup, noodle	0.44	0.44
58407030	Soup, mostly noodles	2.68	2.68
58407035	Soup, mostly noodles, reduced sodium	0.38	0.38
58407050	Instant soup, noodle with egg, shrimp or chicken	2.68	2.68
58408010	Wonton soup	0.26	0.26
58408500	Noodle soup with vegetables, Asian style	1.22	1.22
58409000	Noodle soup, with fish ball, shrimp, and dark green leafy vegetable	1.70	1.70
58421000	Sopa seca, Mexican style, NFS	6.41	6.41
Soft Candy			
Candies and Chocolate			
44201000	Carob chips	31.36	31.36
91700010	Candy, NFS	0.20	0.20
91700500	M&M's Almond Chocolate Candies	27.76	27.76
91701010	Almonds, chocolate covered	43.85	43.85
91701020	Almonds, sugar-coated	17.93	17.93
91701030	Almonds, yogurt-covered	37.32	37.32
91702010	Butterscotch morsels	29.05	29.05
91703010	Caramel, chocolate-flavored roll	3.31	3.31

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
91703020	Caramel, flavor other than chocolate	8.10	8.10
91703030	Caramel, with nuts	14.39	14.39
91703040	Caramel candy, chocolate covered	13.06	13.06
91703050	Caramel with nuts and cereal, chocolate covered	25.10	25.10
91703060	Caramel with nuts, chocolate covered	21.00	21.00
91703070	Rolo	20.93	20.93
91703080	Caramel, all flavors, sugar free	14.08	14.08
91703150	Toblerone, milk chocolate with honey and almond nougat	28.57	28.57
91703200	TWIX Caramel Cookie Bars	24.85	24.85
91703250	TWIX Chocolate Fudge Cookie Bars	33.30	33.30
91703300	TWIX Peanut Butter Cookie Bars	32.67	32.67
91703400	Whatchamacallit	23.68	23.68
91703500	Nuts, carob-coated	40.47	40.47
91703600	Espresso coffee beans, chocolate-covered	33.18	33.18
91705010	Milk chocolate candy, plain	29.66	29.66
91705020	Milk chocolate candy, with cereal	29.37	29.37
91705030	Kit Kat	25.99	25.99
91705040	Chocolate, milk, with nuts, not almond or peanuts	35.06	35.06
91705050	Milk chocolate candy, with fruit and nuts	24.38	24.38
91705060	Milk chocolate candy, with almonds	34.40	34.40
91705070	Chocolate, milk, with peanuts	33.21	33.21
91705090	Chocolate candy with fondant and caramel	20.12	20.12
91705200	Chocolate, semi-sweet morsel	30.00	30.00
91705300	Chocolate, sweet or dark	33.20	33.20
91705310	Chocolate, sweet or dark, with almonds	33.81	33.81
91705400	Chocolate, white	32.09	32.09
91705410	Chocolate, white, with almonds	34.77	34.77
91705420	Chocolate, white, with cereal	29.37	29.37
91705430	Kit Kat White	25.99	25.99
91705500	Mexican chocolate, tablet	15.59	15.59
91706000	Coconut candy, chocolate covered	26.60	26.60
91706100	Coconut candy, no chocolate covering	27.65	27.65
91706400	Coconut candy, Puerto Rican style	13.86	13.86
91707000	Fondant	0.02	0.02
91707010	Fondant, chocolate covered	9.30	9.30
91708000	Fruit peel, candied	0.07	0.07
91708010	Date candy	18.04	18.04
91708020	Soft fruit confections	9.52	9.52
91708030	Fruit leather and fruit snacks candy	2.84	2.84
91708040	Fun Fruits Creme Supremes	21.04	21.04

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
91708150	Yogurt covered fruit snacks candy, with added vitamin C	7.50	7.50
91708160	Yogurt covered fruit snacks candy rolls, with high vitamin C	6.53	6.53
91709000	Gumdrops, chocolate covered	8.30	8.30
91713010	Fudge, chocolate, chocolate-coated	16.18	16.18
91713020	Fudge, chocolate, chocolate-coated, with nuts	22.15	22.15
91713030	Fudge, chocolate	10.41	10.41
91713040	Fudge, chocolate, with nuts	18.93	18.93
91713050	Fudge, peanut butter	16.78	16.78
91713060	Fudge, peanut butter, with nuts	22.97	22.97
91713070	Fudge, vanilla	5.45	5.45
91713080	Fudge, vanilla, with nuts	13.69	13.69
91713090	Fudge, divinity	8.01	8.01
91713100	Fudge, brown sugar, penuche	10.24	10.24
91715000	Fudge, caramel and nut, chocolate-coated candy	23.00	23.00
91715100	SNICKERS Bar	23.85	23.85
91715200	Baby Ruth	21.60	21.60
91715300	100 GRAND Bar	19.33	19.33
91716010	Halvah, plain	32.04	32.04
91716110	Halvah, chocolate covered	31.38	31.38
91718100	Butterfinger	18.90	18.90
91718110	Butterfinger Crisp	18.33	18.33
91718200	Chocolate-flavored sprinkles	30.30	30.30
91718300	Ladoo, round ball, Asian-Indian dessert	21.98	21.98
91721000	Licorice	0.05	0.05
91723000	Marshmallow	0.20	0.20
91723010	Marshmallow, chocolate covered	10.40	10.40
91723020	Marshmallow, candy-coated	0.24	0.24
91726000	Nougat, plain	1.67	1.67
91726110	Nougat, with caramel, chocolate covered	17.23	17.23
91726130	MILKY WAY Bar	17.23	17.23
91726140	MILKY WAY MIDNIGHT Bar	17.50	17.50
91726150	MARS Almond Bar	23.00	23.00
91726410	Nougat, chocolate covered	9.51	9.51
91726420	3 MUSKETEERS Bar	12.75	12.75
91726425	3 Musketeers Truffle Crisp Bar	28.85	28.85
91727010	Nuts, chocolate covered, not almonds or peanuts	41.60	41.60
91728000	Nut roll, fudge or nougat, caramel and nuts	25.00	25.00
91728500	Sugared pecans, sugar and egg white coating	48.84	48.84
91731000	Peanuts, chocolate covered	33.50	33.50
91731010	M&M's Peanut Chocolate Candies	26.13	26.13

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
91731060	M&M's Peanut Butter Chocolate Candies	29.32	29.32
91731100	Peanuts, sugar-coated	33.70	33.70
91731150	Peanuts, yogurt covered	37.01	37.01
91732000	Peanut bar	33.70	33.70
91732100	Planters Peanut Bar	30.58	30.58
91733000	Peanut brittle	18.98	18.98
91733200	Peanut Bar, chocolate covered candy	32.45	32.45
91734000	Peanut butter, chocolate covered	28.36	28.36
91734100	Reese's Peanut Butter Cup	30.53	30.53
91734200	Reese's Pieces	24.77	24.77
91734300	Reese's Sticks	31.34	31.34
91734400	Reese's Fast Break	23.21	23.21
91734450	Reese's Crispy Crunchy Bar	31.34	31.34
91734500	Peanut butter morsels	29.80	29.80
91735000	Pralines	10.24	10.24
91736000	Pineapple candy, Puerto Rican style	0.37	0.37
91739010	Raisins, chocolate covered	14.80	14.80
91739600	Raisins, yogurt covered	11.48	11.48
91742010	Sesame Crunch, Sahadi	33.30	33.30
91745100	Skittles	4.37	4.37
91746010	Sugar-coated chocolate discs	21.13	21.13
91746100	M&M's Milk Chocolate Candies	21.13	21.13
91746120	Sixlets	21.13	21.13
91746150	Easter egg, candy coated chocolate	21.13	21.13
91746200	M&M's Pretzel Chocolate Candies	15.00	15.00
91750000	Taffy	8.03	8.03
91760000	Toffee, plain	8.22	8.22
91760100	Toffee, chocolate covered	30.37	30.37
91760200	Toffee, chocolate-coated, with nuts	18.22	18.22
91760500	Truffles	31.91	31.91
91760700	Wax candy, liquid filled	0.10	0.10
91770010	Dietetic or low calorie gumdrops	0.20	0.20
91770030	Dietetic or low calorie candy, chocolate covered	43.27	43.27
91800100	Chewing gum, NFS	0.37	0.37
91801000	Chewing gum, regular	0.30	0.30
91802000	Chewing gum, sugar free	0.40	0.40
Snack Foods			
Grain-Based Salty Snacks			
54318000	Chips, rice	2.80	2.80
54401011	Corn nuts	15.64	15.64

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
54401021	Corn chips, plain	33.10	33.10
54401026	Corn chips, flavored	34.02	34.02
54401031	Corn chips, plain (Fritos)	33.36	33.36
54401035	Corn chips, flavored (Fritos)	33.19	33.19
54401055	Cheese flavored corn snacks	36.01	36.01
54401065	Cheese flavored corn snacks, reduced fat	12.10	12.10
54401075	Tortilla chips, plain	20.68	20.68
54401081	Cheese flavored corn snacks (Cheetos)	36.01	36.01
54401085	Tortilla chips, flavored	27.42	27.42
54401090	Corn chips, reduced sodium	33.63	33.63
54401095	Tortilla chips, popped	11.19	11.19
54401110	Tortilla chips, nacho cheese flavor (Doritos)	27.42	27.42
54401111	Tortilla chips, cool ranch flavor (Doritos)	20.58	20.58
54401112	Tortilla chips, other flavors (Doritos)	27.42	27.42
54401121	Tortilla chips, reduced fat, plain	5.63	5.63
54401122	Tortilla chips, reduced fat, flavored	5.63	5.63
54401170	Tortilla chips, low fat, unsalted	5.70	5.70
54402080	Tortilla chips, reduced sodium	19.84	19.84
54402200	Snack mix	25.61	25.61
54402610	Potato chips, restructured, multigrain	24.74	24.74
54402700	Pita chips	15.20	15.20
54403001	Popcorn, NFS	31.07	31.07
54403005	Popcorn, movie theater, with added butter	58.78	58.78
54403006	Popcorn, movie theater, unbuttered	48.70	48.70
54403010	Popcorn, air-popped, unbuttered	4.52	4.52
54403040	Popcorn, air-popped, with added butter or margarine	15.19	15.19
54403045	Popcorn, popped in oil, unbuttered	27.99	27.99
54403046	Popcorn, popped in oil, with added butter or margarine	35.09	35.09
54403051	Popcorn, microwave, NFS	31.07	31.07
54403052	Popcorn, microwave, plain	31.07	31.07
54403053	Popcorn, microwave, plain, light	9.43	9.43
54403054	Popcorn, microwave, low sodium	27.88	27.88
54403055	Popcorn, microwave, unsalted	27.88	27.88
54403056	Popcorn, microwave, butter flavored	31.07	31.07
54403057	Popcorn, microwave, butter flavored, light	9.43	9.43
54403058	Popcorn, microwave, cheese flavored	30.95	30.95
54403059	Popcorn, microwave, kettle corn	27.06	27.06
54403061	Popcorn, microwave, kettle corn, light	9.31	9.31
54403062	Popcorn, microwave, other flavored	30.95	30.95
54403080	Popcorn, ready-to-eat packaged, NFS	32.53	32.53

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
54403081	Popcorn, ready-to-eat packaged, plain	23.26	23.26
54403082	Popcorn, ready-to-eat packaged, plain, light	14.92	14.92
54403083	Popcorn, ready-to-eat packaged, low sodium	23.44	23.44
54403084	Popcorn, ready-to-eat packaged, unsalted	23.44	23.44
54403085	Popcorn, ready-to-eat packaged, butter flavored	32.53	32.53
54403086	Popcorn, ready-to-eat packaged, butter flavored, light	14.85	14.85
54403087	Popcorn, ready-to-eat packaged, cheese flavored	33.20	33.20
54403088	Popcorn, ready-to-eat packaged, cheese flavored, light	14.85	14.85
54403089	Popcorn, ready-to-eat-packaged, kettle corn	30.22	30.22
54403091	Popcorn, ready-to-eat packaged, kettle corn, light	13.07	13.07
54403092	Popcorn, ready-to-eat packaged, other flavored	33.20	33.20
54403110	Popcorn, caramel coated	12.70	12.70
54403120	Popcorn, caramel coated, with nuts	7.74	7.74
54403160	Popcorn, chocolate coated	12.79	12.79
54404000	Popcorn chips, plain	11.19	11.19
54404010	Popcorn chips, other flavors	11.19	11.19
54404020	Popcorn chips, sweet flavors	13.51	13.51
54406010	Onion flavored rings	22.60	22.60
54406200	Shrimp chips	17.86	17.86
54408000	Pretzels, NFS	2.93	2.93
54408015	Pretzels, hard, NFS	2.93	2.93
54408016	Pretzels, hard, plain, salted	2.93	2.93
54408017	Pretzels, hard, plain, lightly salted	3.22	3.22
54408030	Pretzels, hard, plain, unsalted	3.50	3.50
54408035	Pretzels, hard, flavored	3.88	3.88
54408070	Pretzels, hard, multigrain	2.96	2.96
54408081	Pretzels, hard, plain, gluten free	6.67	6.67
54408082	Pretzels, hard, flavored, gluten free	7.58	7.58
54408105	Pretzel chips, hard, plain	2.86	2.86
54408110	Pretzel chips, hard, flavored	2.82	2.82
54408115	Pretzel chips, hard, gluten free	6.51	6.51
54408190	Pretzels, hard, coated, NFS	17.64	17.64
54408200	Pretzels, hard, chocolate coated	17.64	17.64
54408210	Pretzels, hard, white chocolate coated	14.19	14.19
54408250	Pretzels, hard, yogurt coated	12.17	12.17
54408260	Pretzels, hard, coated, gluten free	15.57	15.57
54408290	Pretzels, hard, filled, NFS	16.92	16.92
54408300	Pretzels, hard, cheese filled	16.92	16.92
54408310	Pretzels, hard, peanut butter filled	18.91	18.91
54408400	Pretzels, soft, NFS	4.00	4.00

Food Code	Main food description	Total Fat (g/100g)	OPO-Fat Use Level (g/100g)
54408405	Pretzels, soft, ready-to-eat, NFS	4.00	4.00
54408410	Pretzels, soft, ready-to-eat, salted, buttered	4.00	4.00
54408411	Pretzels, soft, ready-to-eat, unsalted, buttered	4.05	4.05
54408415	Pretzels, soft, ready-to-eat, salted, no butter	3.06	3.06
54408416	Pretzels, soft, ready-to-eat, unsalted, no butter	3.10	3.10
54408420	Pretzels, soft, ready-to-eat, cinnamon sugar coated	6.14	6.14
54408422	Pretzels, soft, ready-to-eat, coated or flavored	7.75	7.75
54408430	Pretzels, soft, ready-to-eat, topped with meat	9.93	9.93
54408432	Pretzels, soft, ready-to-eat, topped with cheese	5.36	5.36
54408450	Pretzels, soft, from frozen, NFS	4.00	4.00
54408455	Pretzels, soft, from frozen, salted	3.06	3.06
54408456	Pretzels, soft, from frozen, unsalted	3.10	3.10
54408460	Pretzels, soft, from frozen, cinnamon sugar coated	6.14	6.14
54408462	Pretzels, soft, from frozen, coated or flavored	7.75	7.75
54408465	Pretzels, soft, from frozen, topped with meat	9.93	9.93
54408466	Pretzels, soft, from frozen, topped with cheese	5.36	5.36
54408470	Pretzels, soft, filled with cheese	5.36	5.36
54408475	Pretzels, soft, from school lunch	3.16	3.16
54408480	Pretzels, soft, multigrain	3.13	3.13
54408485	Pretzels, soft, gluten free	5.74	5.74
54408486	Pretzels, soft, gluten free, cinnamon sugar coated	8.14	8.14
54408487	Pretzels, soft, gluten free, coated or flavored	10.37	10.37
54420210	Multigrain chips (Sun Chips)	21.11	21.11
54420220	Snack mix, plain (Chex Mix)	10.00	10.00
54440010	Bagel chips	15.14	15.14
54440020	Cracker chips	21.11	21.11

Mixed Dishes Containing Processed Foods

Adjusted for a processed food content of 2.3 to 90%

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
French Toast, Pancakes, and Waffles				
32202055	Egg, cheese, and sausage griddle cake sandwich	17.73	65.2	11.56
32202075	Egg, cheese, and bacon griddle cake sandwich	13.19	65.2	8.60
Yeast Breads and Rolls				
14640000	Cheese sandwich, NFS	11.61	58.8	6.83

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
14640002	Cheese sandwich, American cheese, on white bread, no spread	11.61	58.8	6.83
14640004	Cheese sandwich, American cheese, on wheat bread, no spread	11.83	58.8	6.96
14640006	Cheese sandwich, American cheese, on whole wheat bread, no spread	11.83	58.8	6.96
14640008	Cheese sandwich, Cheddar cheese, on white bread, no spread	16.11	58.8	9.48
14640010	Cheese sandwich, Cheddar cheese, on wheat bread, no spread	16.34	58.8	9.61
14640012	Cheese sandwich, Cheddar cheese, on whole wheat bread, no spread	16.34	58.8	9.61
14640014	Cheese sandwich, reduced fat American cheese, on white bread, no spread	7.92	58.8	4.66
14640016	Cheese sandwich, reduced fat American cheese, on wheat bread, no spread	8.14	58.8	4.79
14640018	Cheese sandwich, reduced fat American cheese, on whole wheat bread, no spread	8.14	58.8	4.79
14640020	Cheese sandwich, reduced fat Cheddar cheese, on white bread, no spread	10.52	58.8	6.19
14640022	Cheese sandwich, reduced fat Cheddar cheese, on wheat bread, no spread	10.74	58.8	6.32
14640024	Cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread, no spread	10.74	58.8	6.32
14640026	Cheese sandwich, American cheese, on white bread, with mayonnaise	19.24	63.8	12.27
14640028	Cheese sandwich, American cheese, on wheat bread, with mayonnaise	19.44	63.8	12.40
14640030	Cheese sandwich, American cheese, on whole wheat bread, with mayonnaise	19.44	63.8	12.40
14640032	Cheese sandwich, Cheddar cheese, on white bread, with mayonnaise	23.20	63.8	14.80
14640034	Cheese sandwich, Cheddar cheese, on wheat bread, with mayonnaise	23.40	63.8	14.93
14640036	Cheese sandwich, Cheddar cheese, on whole wheat bread, with mayonnaise	23.40	63.8	14.93
14640038	Cheese sandwich, reduced fat American cheese, on white bread, with mayonnaise	16.00	63.8	10.21
14640040	Cheese sandwich, reduced fat American cheese,, on wheat bread, with mayonnaise	16.20	63.8	10.33
14640042	Cheese sandwich, reduced fat American cheese, on whole wheat bread, with mayonnaise	16.20	63.8	10.33
14640044	Cheese sandwich, reduced fat Cheddar cheese, on white bread, with mayonnaise	18.28	63.8	11.66

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
14640046	Cheese sandwich, reduced fat Cheddar cheese, on wheat bread, with mayonnaise	18.48	63.8	11.79
14640048	Cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread, with mayonnaise	18.48	63.8	11.79
14640050	Cheese sandwich, American cheese, on white bread, with butter	19.22	51.7	9.94
14640052	Cheese sandwich, American cheese, on wheat bread, with butter	19.42	51.7	10.04
14640054	Cheese sandwich, American cheese, on whole wheat bread, with butter	19.42	51.7	10.04
14640056	Cheese sandwich, Cheddar cheese, on white bread, with butter	23.18	51.7	11.99
14640058	Cheese sandwich, Cheddar cheese, on wheat bread, with butter	23.38	51.7	12.09
14640060	Cheese sandwich, Cheddar cheese, on whole wheat bread, with butter	23.38	51.7	12.09
14640062	Cheese sandwich, reduced fat American cheese, on white bread, with butter	15.98	51.7	8.27
14640064	Cheese sandwich, reduced fat American cheese, on wheat bread, with butter	16.18	51.7	8.37
14640066	Cheese sandwich, reduced fat American cheese, on whole wheat bread, with butter	16.18	51.7	8.37
14640068	Cheese sandwich, reduced fat Cheddar cheese, on white bread, with butter	18.26	51.7	9.44
14640070	Cheese sandwich, reduced fat Cheddar cheese, on wheat bread, with butter	18.46	51.7	9.55
14640072	Cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread, with butter	18.46	51.7	9.55
14640100	Grilled cheese sandwich, NFS	19.22	63.8	12.26
14640105	Grilled cheese sandwich, American cheese, on white bread	19.22	63.8	12.26
14640110	Grilled cheese sandwich, American cheese, on wheat bread	19.42	63.8	12.39
14640115	Grilled cheese sandwich, American cheese, on whole wheat bread	19.42	63.8	12.39
14640125	Grilled cheese sandwich, Cheddar cheese, on white bread	23.18	63.8	14.79
14640130	Grilled cheese sandwich, Cheddar cheese, on wheat bread	23.38	63.8	14.91
14640135	Grilled cheese sandwich, Cheddar cheese, on whole wheat bread	23.38	63.8	14.91
14640155	Grilled cheese sandwich, reduced fat American cheese, on white bread	15.98	63.8	10.19
14640160	Grilled cheese sandwich, reduced fat American cheese, on wheat bread	16.18	63.8	10.32

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
14640165	Grilled cheese sandwich, reduced fat American cheese, on whole wheat bread	16.18	63.8	10.32
14640185	Grilled cheese sandwich, reduced fat Cheddar cheese, on white bread	18.26	63.8	11.65
14640190	Grilled cheese sandwich, reduced fat Cheddar cheese, on wheat bread	18.46	63.8	11.78
14640195	Grilled cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread	18.46	63.8	11.78
27500050	Sandwich, NFS	13.70	63.0	8.63
27500100	Meat sandwich, NFS	13.70	63.0	8.63
27500300	Wrap sandwich, NFS	9.43	22.9	2.16
27510000	Beef sandwich, NFS	7.33	63.0	4.62
27510130	Beef barbecue submarine sandwich, on bun	5.37	37.2	2.00
27510140	Cheeseburger slider, from fast food	14.38	48.2	6.93
27510155	Cheeseburger, NFS	16.21	36.1	5.84
27510160	Cheeseburger, from fast food, 1 small patty	14.88	36.1	5.37
27510170	Cheeseburger (Burger King)	11.82	36.1	4.26
27510171	Whopper Jr with cheese (Burger King)	12.16	36.1	4.38
27510172	Cheeseburger (McDonalds)	12.90	36.1	4.65
27510190	Cheeseburger, from school cafeteria	8.64	36.1	3.12
27510191	Cheeseburger slider	16.47	36.1	5.94
27510195	Cheeseburger, on white bun, 1 small patty	16.12	36.1	5.81
27510196	Cheeseburger, on wheat bun, 1 small patty	16.15	36.1	5.82
27510215	Cheeseburger, from fast food, 1 medium patty	16.21	36.1	5.84
27510229	Quarter Pounder (McDonalds)	11.60	36.1	4.18
27510231	Whopper with cheese (Burger King)	15.80	36.1	5.70
27510232	Quarter Pounder with cheese (McDonalds)	14.40	36.1	5.19
27510235	Cheeseburger submarine sandwich with lettuce, tomato and spread	5.34	41.8	2.23
27510241	Cheeseburger, on white bun, 1 medium patty	16.21	36.1	5.84
27510242	Cheeseburger, on wheat bun, 1 medium patty	16.24	36.1	5.86
27510245	Cheeseburger, on white bun, 1 large patty	17.68	36.1	6.38
27510246	Cheeseburger, on wheat bun, 1 large patty	17.71	36.1	6.39
27510254	Double cheeseburger, on white bun, 2 small patties	17.91	36.1	6.46
27510255	Double cheeseburger, on wheat bun, 2 small patties	17.93	36.1	6.47
27510257	Double cheeseburger, on white bun, 2 medium patties	18.91	36.1	6.82
27510258	Double cheeseburger, on wheat bun, 2 medium patties	18.93	36.1	6.83
27510261	Cheeseburger, from fast food, 1 large patty	17.68	36.1	6.38
27510262	Double cheeseburger, on white bun, 2 large patties	19.42	36.1	7.00
27510263	Double cheeseburger, on wheat bun, 2 large patties	19.43	36.1	7.01
27510371	Double cheeseburger, from fast food, 2 small patties	16.67	36.1	6.01

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27510386	Double cheeseburger (Burger King)	15.03	36.1	5.42
27510387	Double cheeseburger (McDonalds)	16.18	36.1	5.83
27510388	McDouble (McDonalds)	16.18	36.1	5.83
27510389	Big Mac (McDonalds)	14.10	36.1	5.08
27510401	Double cheeseburger, from fast food, 2 medium patties	18.91	36.1	6.82
27510405	Double cheeseburger, from fast food, 2 large patties	19.42	36.1	7.00
27510501	Hamburger slider, from fast food	11.35	36.1	4.09
27510521	Hamburger, NFS	14.38	36.1	5.19
27510531	Hamburger, from fast food, 1 small patty	11.68	36.1	4.21
27510551	Hamburger (Burger King)	10.24	36.1	3.69
27510552	Whopper Jr (Burger King)	9.59	36.1	3.46
27510553	Hamburger (McDonalds)	10.18	36.1	3.67
27510565	Hamburger, from school cafeteria	7.37	36.1	2.66
27510573	Hamburger slider	14.72	36.1	5.31
27510575	Hamburger, on white bun, 1 small patty	13.83	36.1	4.99
27510576	Hamburger, on wheat bun, 1 small patty	13.87	36.1	5.00
27510601	Hamburger, from fast food, 1 medium patty	14.38	36.1	5.19
27510605	Hamburger, from fast food, 1 large patty	15.63	36.1	5.64
27510615	Whopper (Burger King)	12.37	36.1	4.46
27510631	Hamburger, on white bun, 1 medium patty	14.38	36.1	5.19
27510632	Hamburger, on wheat bun, 1 medium patty	14.41	36.1	5.20
27510635	Hamburger, on white bun, 1 large patty	15.63	36.1	5.64
27510636	Hamburger, on wheat bun, 1 large patty	15.66	36.1	5.65
27510649	Double hamburger, on white bun, 2 small patties	16.65	36.1	6.00
27510652	Double hamburger, on wheat bun, 2 small patties	16.67	36.1	6.01
27510655	Double hamburger, on white bun, 2 medium patties	17.09	36.1	6.16
27510657	Double hamburger, on wheat bun, 2 medium patties	17.11	36.1	6.17
27510658	Double hamburger, on white bun, 2 large patties	18.05	36.1	6.51
27510659	Double hamburger, on wheat bun, 2 large patties	18.07	36.1	6.52
27510661	Double hamburger, from fast food, 2 small patties	14.73	36.1	5.31
27510671	Double hamburger, from fast food, 2 medium patties	17.09	36.1	6.16
27510675	Double hamburger, from fast food, 2 large patties	18.05	36.1	6.51
27510700	Meatball and spaghetti sauce submarine sandwich	8.45	36.1	3.05
27510705	Chiliburger, with or without cheese, on bun	11.04	36.1	3.98
27510910	Corned beef sandwich	7.43	63.0	4.68
27510950	Reuben sandwich, corned beef sandwich with sauerkraut and cheese, with spread	17.25	79.5	13.71
27511010	Pastrami sandwich	3.81	63.0	2.40
27513010	Roast beef sandwich	10.30	63.0	6.49
27513020	Roast beef sandwich, with gravy	12.73	63.0	8.02

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27513040	Roast beef submarine sandwich, with lettuce, tomato and spread	6.16	67.7	4.17
27513041	Roast beef submarine sandwich, with cheese, lettuce, tomato and spread	7.33	67.5	4.95
27513050	Roast beef sandwich with cheese	19.80	63.0	12.47
27513060	Roast beef sandwich with bacon and cheese sauce	20.77	63.0	13.08
27513070	Roast beef submarine sandwich, on roll, au jus	12.78	63.0	8.05
27515000	Steak submarine sandwich with lettuce and tomato	5.95	63.0	3.75
27515010	Steak sandwich, plain, on roll	8.12	63.0	5.11
27515020	Steak and cheese submarine sandwich, with lettuce and tomato	5.34	63.0	3.36
27515030	Steak and cheese sandwich, plain, on roll	10.24	63.0	6.45
27515040	Steak and cheese submarine sandwich, plain, on roll	9.53	63.0	6.00
27515050	Fajita-style beef sandwich with cheese, on pita bread, with lettuce and tomato	6.96	63.0	4.38
27515070	Steak and cheese submarine sandwich, with fried peppers and onions, on roll	10.07	63.0	6.34
27515080	Steak sandwich, plain, on biscuit	14.73	63.0	9.28
27516010	Gyro sandwich (pita bread, beef, lamb, onion, condiments), with tomato and spread	4.77	68.8	3.28
27517000	Hamburger wrap sandwich, from fast food	16.06	63.0	10.11
27520110	Bacon sandwich, with spread	18.00	67.9	12.23
27520120	Bacon and cheese sandwich, with spread	17.02	66.6	11.34
27520140	Bacon and egg sandwich	12.79	63.0	8.05
27520150	Bacon, lettuce, and tomato sandwich with spread	10.26	69.4	7.12
27520155	Bacon, lettuce, and tomato submarine sandwich, with spread	6.41	68.8	4.41
27520156	Bacon, lettuce, tomato, and cheese submarine sandwich, with spread	13.94	66.2	9.22
27520170	Bacon on biscuit	20.99	63.0	13.22
27520250	Ham on biscuit	16.30	63.0	10.26
27520300	Ham sandwich, with spread	7.74	68.7	5.32
27520310	Ham sandwich with lettuce and spread	5.94	66.6	3.95
27520320	Ham and cheese sandwich, with lettuce and spread	9.05	65.9	5.96
27520340	Ham salad sandwich	10.34	72.5	7.50
27520360	Ham and cheese sandwich, on bun, with lettuce and spread	8.83	65.9	5.82
27520370	Hot ham and cheese sandwich, on bun	9.65	69.0	6.66
27520380	Ham and cheese on English muffin	12.36	63.0	7.78
27520390	Ham and cheese submarine sandwich, with lettuce, tomato and spread	2.53	68.8	1.74
27520410	Cuban sandwich, with spread	11.96	68.5	8.19

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27520420	Midnight sandwich, with spread	9.03	65.2	5.89
27520500	Pork sandwich, on white roll, with onions, dill pickles and barbecue sauce	6.47	63.0	4.07
27520510	Pork barbecue sandwich or Sloppy Joe, on bun	4.07	63.0	2.56
27520520	Pork sandwich	6.39	63.0	4.02
27540110	Sliced chicken sandwich, with spread	6.36	66.9	4.25
27540111	Sliced chicken sandwich, with cheese and spread	8.89	66.3	5.89
27540120	Chicken salad or chicken spread sandwich	10.90	72.6	7.91
27540130	Chicken barbecue sandwich	4.55	63.0	2.87
27540132	Chicken fillet sandwich, NFS	13.46	63.0	8.48
27540139	Chicken fillet sandwich, from school cafeteria	8.06	63.0	5.08
27540145	Chicken fillet biscuit, from fast food	19.09	63.0	12.02
27540146	Chicken fillet sandwich, fried, from fast food	13.46	63.0	8.48
27540147	Chicken fillet sandwich, fried, from fast food, with cheese	15.40	63.0	9.70
27540152	Chicken fillet sandwich, grilled, from fast food	6.18	63.0	3.89
27540153	Chicken fillet sandwich, grilled, from fast food, with cheese	9.11	63.0	5.74
27540160	Chicken fillet sandwich, NS as to fried or grilled, from fast food	13.46	63.0	8.48
27540175	Chicken fillet sandwich, fried, on white bun	11.67	63.0	7.35
27540176	Chicken fillet sandwich, fried, on white bun; with cheese	13.88	63.0	8.74
27540185	Chicken fillet sandwich, fried, on wheat bun	11.71	63.0	7.37
27540186	Chicken fillet sandwich, fried, on wheat bun, with cheese	13.91	63.0	8.76
27540195	Chicken fillet sandwich, grilled, on white bun	4.84	63.0	3.05
27540196	Chicken fillet sandwich, grilled, on white bun, with cheese	7.99	63.0	5.03
27540205	Chicken fillet sandwich, grilled, on wheat bun	4.88	63.0	3.07
27540206	Chicken fillet sandwich, grilled, on wheat bun, with cheese	8.01	63.0	5.04
27540210	Chicken fillet wrap sandwich, fried, from fast food	16.74	63.0	10.54
27540285	Chicken, bacon, and tomato club sandwich, with lettuce and spread	8.05	68.8	5.53
27540290	Chicken submarine sandwich, with lettuce, tomato and spread	2.37	68.8	1.63
27540291	Chicken submarine sandwich, with cheese, lettuce, tomato and spread	2.37	68.8	1.63
27540295	Buffalo chicken submarine sandwich	7.81	69.6	5.44
27540296	Buffalo chicken submarine sandwich with cheese	9.77	68.9	6.73
27540300	Chicken fillet wrap sandwich, grilled, from fast food	10.48	63.0	6.60
27540310	Turkey sandwich, with spread	7.03	67.6	4.75

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27540320	Turkey salad or turkey spread sandwich	9.93	72.5	7.20
27540350	Turkey submarine sandwich, with cheese, lettuce, tomato and spread	2.31	68.8	1.59
27540360	Turkey and bacon submarine sandwich, with lettuce, tomato and spread	9.47	69.5	6.58
27540361	Turkey and bacon submarine sandwich, with cheese, lettuce, tomato and spread	11.45	68.7	7.87
27541000	Turkey, ham, and roast beef club sandwich, with lettuce, tomato and spread	8.07	67.5	5.45
27541001	Turkey, ham, and roast beef club sandwich with cheese, lettuce, tomato, and spread	2.42	68.8	1.66
27545100	Turkey or chicken burger, on white bun	7.69	63.0	4.84
27545110	Turkey or chicken burger, on wheat bun	7.73	63.0	4.87
27550000	Fish sandwich, fried, from fast food	8.12	63.0	5.11
27550100	Fish sandwich, fried, from fast food, with cheese	10.99	63.0	6.92
27550110	Crab cake sandwich	11.03	63.0	6.95
27550120	Salmon cake sandwich	13.30	63.0	8.37
27550150	Fried seafood sandwich	8.93	63.0	5.62
27550200	Fish sandwich, from school cafeteria	5.04	63.0	3.17
27550300	Fish sandwich, NFS	10.99	63.0	6.92
27550400	Fish sandwich, fried, on white bun	8.14	63.0	5.13
27550405	Fish sandwich, fried, on white bun, with cheese	11.00	63.0	6.93
27550410	Fish sandwich, fried, on wheat bun	8.17	63.0	5.14
27550415	Fish sandwich, fried, on wheat bun, with cheese	11.04	63.0	6.95
27550420	Fish sandwich, grilled	1.98	63.0	1.25
27550425	Fish wrap sandwich	12.48	63.0	7.86
27550510	Sardine sandwich	7.96	63.0	5.01
27550720	Tuna salad sandwich, on bread	11.76	63.0	7.41
27550730	Tuna salad sandwich, on bread, with cheese	13.66	63.0	8.60
27550740	Tuna salad sandwich, on bun	11.76	63.0	7.41
27550745	Tuna salad sandwich, on bun, with cheese	13.56	63.0	8.54
27550755	Tuna salad wrap sandwich	14.87	63.0	9.36
27550800	Seafood salad sandwich	11.83	63.0	7.45
27560000	Luncheon meat sandwich, NFS, with spread	2.53	68.8	1.74
27560110	Bologna sandwich, with spread	13.70	68.1	9.33
27560120	Bologna and cheese sandwich, with spread	15.96	66.9	10.67
27560300	Corn dog, frankfurter or hot dog with cornbread coating	12.02	63.0	7.57
27560350	Pig in a blanket, frankfurter or hot dog wrapped in dough	21.83	63.0	13.75
27560410	Puerto Rican sandwich	17.98	63.0	11.32

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27560500	Pepperoni and salami submarine sandwich, with lettuce, tomato and spread	13.34	69.6	9.29
27560510	Salami sandwich, with spread	16.15	68.1	11.01
27560650	Sausage on biscuit	24.42	63.0	15.38
27560660	Sausage griddle cake sandwich	17.76	63.0	11.18
27560670	Sausage and cheese on English muffin	20.67	63.0	13.02
27560710	Sausage sandwich	15.49	63.0	9.75
27560720	Sausage and spaghetti sauce sandwich	13.22	63.0	8.32
27560910	Cold cut sumarine sandwich, with cheese, lettuce, tomato and spread	10.04	68.8	6.90
27563010	Meat spread or potted meat sandwich	10.51	63.0	6.62
27564000	Frankfurter or hot dog sandwich, NFS, plain, on white bun	18.20	44.1	8.03
27564001	Frankfurter or hot dog sandwich, NFS, plain, on wheat bun	18.06	44.1	7.97
27564002	Frankfurter or hot dog sandwich, NFS, plain, on whole wheat bun	18.40	44.1	8.12
27564003	Frankfurter or hot dog sandwich, NFS, plain, on whole grain white bun	18.01	44.1	7.95
27564004	Frankfurter or hot dog sandwich, NFS, plain, on multigrain bun	19.12	44.1	8.44
27564010	Frankfurter or hot dog sandwich, NFS, plain, on white bread	20.95	44.1	9.24
27564020	Frankfurter or hot dog sandwich, NFS, plain, on wheat bread	21.26	44.1	9.38
27564030	Frankfurter or hot dog sandwich, NFS, plain, on whole wheat bread	19.44	44.1	8.58
27564040	Frankfurter or hot dog sandwich, NFS, plain, on whole grain white bread	18.90	44.1	8.34
27564050	Frankfurter or hot dog sandwich, NFS, plain, on multigrain bread	19.70	44.1	8.69
27564060	Frankfurter or hot dog sandwich, beef, plain, on white bun	18.20	44.1	8.03
27564061	Frankfurter or hot dog sandwich, beef, plain, on wheat bun	18.06	44.1	7.97
27564062	Frankfurter or hot dog sandwich, beef, plain, on whole wheat bun	18.40	44.1	8.12
27564063	Frankfurter or hot dog sandwich, beef, plain, on whole grain white bun	18.01	44.1	7.95
27564064	Frankfurter or hot dog sandwich, beef, plain, on multigrain bun	19.12	44.1	8.44
27564070	Frankfurter or hot dog sandwich, beef, plain, on white bread	20.95	44.1	9.24

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27564080	Frankfurter or hot dog sandwich, beef, plain, on wheat bread	21.26	44.1	9.38
27564090	Frankfurter or hot dog sandwich, beef, plain, on whole wheat bread	19.44	44.1	8.58
27564100	Frankfurter or hot dog sandwich, beef, plain, on whole grain white bread	18.90	44.1	8.34
27564110	Frankfurter or hot dog sandwich, beef, plain, on multigrain bread	19.70	44.1	8.69
27564120	Frankfurter or hot dog sandwich, beef and pork, plain, on white bun	16.04	44.1	7.08
27564121	Frankfurter or hot dog sandwich, beef and pork, plain, on wheat bun	15.90	44.1	7.01
27564122	Frankfurter or hot dog sandwich, beef and pork, plain, on whole wheat bun	16.26	44.1	7.17
27564123	Frankfurter or hot dog sandwich, beef and pork, plain, on whole grain white bun	15.84	44.1	6.99
27564124	Frankfurter or hot dog sandwich, beef and pork, plain, on multigrain bun	17.01	44.1	7.50
27564130	Frankfurter or hot dog sandwich, beef and pork, plain, on white bread	18.31	44.1	8.08
27564140	Frankfurter or hot dog sandwich, beef and pork, plain, on wheat bread	18.64	44.1	8.22
27564150	Frankfurter or hot dog sandwich, beef and pork, plain, on whole wheat bread	17.05	44.1	7.52
27564160	Frankfurter or hot dog sandwich, beef and pork, plain, on whole grain white bread	16.48	44.1	7.27
27564170	Frankfurter or hot dog sandwich, beef and pork, plain, on multigrain bread	17.32	44.1	7.64
27564180	Frankfurter or hot dog sandwich, meat and poultry, plain, on white bun	15.95	44.1	7.04
27564181	Frankfurter or hot dog sandwich, meat and poultry, plain, on wheat bun	15.82	44.1	6.98
27564182	Frankfurter or hot dog sandwich, meat and poultry, plain, on whole wheat bun	16.16	44.1	7.13
27564183	Frankfurter or hot dog sandwich, meat and poultry, plain, on whole grain white bun	15.76	44.1	6.95
27564184	Frankfurter or hot dog sandwich, meat and poultry, plain, on multigrain bun	16.87	44.1	7.44
27564190	Frankfurter or hot dog sandwich, meat and poultry, plain, on white bread	18.25	44.1	8.05
27564200	Frankfurter or hot dog sandwich, meat and poultry, plain, on wheat bread	18.56	44.1	8.19
27564210	Frankfurter or hot dog sandwich, meat and poultry, plain, on whole wheat bread	16.97	44.1	7.49

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27564220	Frankfurter or hot dog sandwich, meat and poultry, plain, on whole grain white bread	16.43	44.1	7.25
27564230	Frankfurter or hot dog sandwich, meat and poultry, plain, on multigrain bread	17.24	44.1	7.61
27564240	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on white bun	11.90	44.1	5.25
27564241	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on wheat bun	11.76	44.1	5.19
27564242	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole wheat bun	12.10	44.1	5.34
27564243	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole grain white bun	11.71	44.1	5.17
27564244	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on multigrain bun	12.82	44.1	5.66
27564250	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on white bread	13.39	44.1	5.91
27564260	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on wheat bread	13.70	44.1	6.04
27564270	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole wheat bread	12.53	44.1	5.53
27564280	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole grain white bread	11.99	44.1	5.29
27564290	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on multigrain bread	12.79	44.1	5.64
32101500	Egg, Benedict	21.59	18.5	4.00
27564300	Frankfurter or hot dog sandwich, reduced fat or light, plain, on white bun	3.37	44.1	1.49
27564301	Frankfurter or hot dog sandwich, reduced fat or light, plain, on wheat bun	3.24	44.1	1.43
27564302	Frankfurter or hot dog sandwich, reduced fat or light, plain, on whole wheat bun	3.58	44.1	1.58
27564303	Frankfurter or hot dog sandwich, reduced fat or light, plain, on whole grain white bun	3.19	44.1	1.41
27564304	Frankfurter or hot dog sandwich, reduced fat or light, plain, on multigrain bun	4.29	44.1	1.89
27564310	Frankfurter or hot dog sandwich, reduced fat or light, plain, on white bread	3.16	44.1	1.39
27564320	Frankfurter or hot dog sandwich, reduced fat or light, plain, on wheat bread	3.47	44.1	1.53
27564330	Frankfurter or hot dog sandwich, reduced fat or light, plain, on whole wheat bread	3.18	44.1	1.40
27564340	Frankfurter or hot dog sandwich, reduced fat or light, plain, on whole grain white bread	2.64	44.1	1.16
27564350	Frankfurter or hot dog sandwich, reduced fat or light, plain, on multigrain bread	3.44	44.1	1.52

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27564360	Frankfurter or hot dog sandwich, fat free, plain, on white bun	2.66	44.1	1.17
27564361	Frankfurter or hot dog sandwich, fat free, plain, on wheat bun	2.53	44.1	1.12
27564362	Frankfurter or hot dog sandwich, fat free, plain, on whole wheat bun	2.87	44.1	1.27
27564363	Frankfurter or hot dog sandwich, fat free, plain, on whole grain white bun	2.48	44.1	1.09
32202000	Egg, cheese, ham, and bacon on bun	13.23	32.7	4.33
32202010	Egg, cheese, and ham on English muffin	9.66	40.0	3.86
32202020	Egg, cheese, and ham on biscuit	16.37	51.2	8.38
27564364	Frankfurter or hot dog sandwich, fat free, plain, on multigrain bun	3.58	44.1	1.58
32202030	Egg, cheese, and sausage on English muffin	18.10	40.0	7.24
32202034	Egg, cheese, and sausage on bun	15.38	30.9	4.75
32202045	Egg, cheese, and steak on bagel	14.07	37.7	5.31
32202050	Egg, cheese, and sausage on biscuit	22.13	51.2	11.33
27564370	Frankfurter or hot dog sandwich, fat free, plain, on white bread	2.31	44.1	1.02
32202060	Egg and sausage on biscuit	20.77	51.2	10.64
32202070	Egg, cheese, and bacon on biscuit	17.48	51.2	8.95
27564380	Frankfurter or hot dog sandwich, fat free, plain, on wheat bread	2.62	44.1	1.16
27564390	Frankfurter or hot dog sandwich, fat free, plain, on whole wheat bread	2.40	44.1	1.06
32202085	Egg, cheese and bacon on bagel	12.71	37.7	4.80
32202090	Egg and bacon on biscuit	20.73	51.2	10.62
32202110	Egg and ham on biscuit	14.08	51.2	7.21
32202120	Egg, cheese and sausage on bagel	16.97	37.7	6.41
32202130	Egg and steak on biscuit	18.27	61.0	11.14
32202200	Egg and cheese on biscuit	21.09	41.4	8.74
27564400	Frankfurter or hot dog sandwich, fat free, plain, on whole grain white bread	1.86	44.1	0.82
27564410	Frankfurter or hot dog sandwich, fat free, plain, on multigrain bread	2.66	44.1	1.17
27564418	Frankfurter or hot dog sandwich, reduced sodium	17.66	44.1	7.79
27564420	Frankfurter or hot dog sandwich, meatless, plain, on bun	9.89	44.1	4.36
27564430	Frankfurter or hot dog sandwich, meatless, plain, on bread	10.83	44.1	4.78
27564440	Frankfurter or hot dog sandwich, with chili, on white bun	12.52	44.1	5.52

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27564441	Frankfurter or hot dog sandwich, with chili, on wheat bun	12.44	44.1	5.49
27564442	Frankfurter or hot dog sandwich, with chili, on whole wheat bun	12.44	44.1	5.49
27564443	Frankfurter or hot dog sandwich, with chili, on whole grain white bun	12.40	44.1	5.47
27564444	Frankfurter or hot dog sandwich, with chili, on multigrain bun	13.08	44.1	5.77
27564450	Frankfurter or hot dog sandwich, with chili, on white bread	13.44	44.1	5.93
27564460	Frankfurter or hot dog sandwich, with chili, on wheat bread	13.62	44.1	6.01
27564470	Frankfurter or hot dog sandwich, with chili, on whole wheat bread	12.93	44.1	5.70
27564480	Frankfurter or hot dog sandwich, with chili, on whole grain white bread	12.61	44.1	5.56
27564490	Frankfurter or hot dog sandwich, with chili, on multigrain bread	13.08	44.1	5.77
27564500	Frankfurter or hot dog sandwich, with meatless chili, on white bun	12.63	44.1	5.57
27564501	Frankfurter or hot dog sandwich, with meatless chili, on wheat bun	12.55	44.1	5.54
27564502	Frankfurter or hot dog sandwich, with meatless chili, on whole wheat bun	12.76	44.1	5.63
27564503	Frankfurter or hot dog sandwich, with meatless chili, on whole grain white bun	12.52	44.1	5.52
27564504	Frankfurter or hot dog sandwich, with meatless chili, on multigrain bun	13.20	44.1	5.82
27564510	Frankfurter or hot dog sandwich, with meatless chili, on white bread	13.56	44.1	5.98
27564520	Frankfurter or hot dog sandwich, with meatless chili, on wheat bread	13.74	44.1	6.06
27564530	Frankfurter or hot dog sandwich, with meatless chili, on whole wheat bread	12.93	44.1	5.70
27564540	Frankfurter or hot dog sandwich, with meatless chili, on whole grain white bread	12.73	44.1	5.62
27564550	Frankfurter or hot dog sandwich, with meatless chili, on multigrain bread	13.20	44.1	5.82
27564560	Frankfurter or hot dog sandwich, meatless, on bun, with meatless chili	7.70	44.1	3.40
27564570	Frankfurter or hot dog sandwich, meatless, on bread, with meatless chili	8.04	44.1	3.55
32202080	Egg, cheese, and bacon on English muffin	9.66	65.2	6.30
32203010	Egg salad sandwich	20.85	84.9	17.71

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
32204010	Scrambled egg sandwich	9.74	65.2	6.35
42301010	Peanut butter sandwich, NFS	20.11	65.2	13.12
42301015	Peanut butter sandwich, with regular peanut butter, on white bread	20.11	65.2	13.12
42301020	Peanut butter sandwich, with regular peanut butter, on wheat bread	20.37	65.2	13.28
42301025	Peanut butter sandwich, with regular peanut butter, on whole wheat bread	20.37	65.2	13.28
42301115	Peanut butter sandwich, with reduced fat peanut butter, on white bread	14.17	65.2	9.24
42301120	Peanut butter sandwich, with reduced fat peanut butter, on wheat bread	14.42	65.2	9.40
42301125	Peanut butter sandwich, with reduced fat peanut butter, on whole wheat bread	14.42	65.2	9.40
42302010	Peanut butter and jelly sandwich, NFS	16.53	65.2	10.78
42302015	Peanut butter and jelly sandwich, with regular peanut butter, regular jelly, on white bread	16.53	65.2	10.78
42302020	Peanut butter and jelly sandwich, with regular peanut butter, regular jelly, on wheat bread	16.73	65.2	10.91
42302025	Peanut butter and jelly sandwich, with regular peanut butter, regular jelly, on whole wheat bread	16.73	65.2	10.91
42302055	Peanut butter and jelly sandwich, with reduced fat peanut butter, regular jelly, on white bread	11.64	65.2	7.59
42302060	Peanut butter and jelly sandwich, with reduced fat peanut butter, regular jelly, on wheat bread	11.85	65.2	7.73
42302065	Peanut butter and jelly sandwich, with reduced fat peanut butter, regular jelly, on whole wheat bread	11.85	65.2	7.73
42302105	Peanut butter and jelly sandwich, with regular peanut butter, reduced sugar jelly, on white bread	16.54	65.2	10.79
42302110	Peanut butter and jelly sandwich, with regular peanut butter, reduced sugar jelly, on wheat bread	16.75	65.2	10.92
42302115	Peanut butter and jelly sandwich, with regular peanut butter, reduced sugar jelly, on whole wheat bread	16.75	65.2	10.92
42302155	Peanut butter and jelly sandwich, with reduced fat peanut butter, reduced sugar jelly, on white bread	11.66	65.2	7.60
42302160	Peanut butter and jelly sandwich, with reduced fat peanut butter, reduced sugar jelly, on wheat bread	11.86	65.2	7.73
42302165	Peanut butter and jelly sandwich, with reduced fat peanut butter, reduced sugar jelly, on whole wheat bread	11.86	65.2	7.73
42303100	Peanut butter and jelly sandwich, frozen commercial product without crusts	16.53	65.2	10.78
74701000	Tomato sandwich	7.09	72.4	5.14
58201000	Jelly sandwich, regular jelly, NFS	2.16	60.0	1.30

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
58201005	Jelly sandwich, regular jelly, on white bread	2.16	60.0	1.30
58201015	Jelly sandwich, regular jelly, on wheat bread	2.39	60.0	1.43
58201025	Jelly sandwich, regular jelly, on whole wheat bread	2.39	60.0	1.43
58201035	Jelly sandwich, reduced sugar jelly, on white bread	2.19	60.0	1.31
58201045	Jelly sandwich, reduced sugar jelly, on wheat bread	2.43	60.0	1.46
58201055	Jelly sandwich, reduced sugar jelly, on whole wheat bread	2.43	60.0	1.46
32202025	Egg, cheese and ham on bagel	12.70	42.4	5.38
Margarine, and Margarine-Like Spreads				
26100122	Fish, NS as to type, baked or broiled, made with margarine	6.82	2.9	0.20
26100132	Fish, NS as to type, coated, baked or broiled, made with margarine	7.80	4.5	0.35
26100142	Fish, NS as to type, coated, fried, made with margarine	10.33	7.4	0.77
26107122	Catfish, baked or broiled, made with margarine	9.72	2.9	0.29
26107132	Catfish, coated, baked or broiled, made with margarine	10.01	4.5	0.45
26107142	Catfish, coated, fried, made with margarine	12.35	7.4	0.91
26109122	Cod, baked or broiled, made with margarine	2.96	2.9	0.09
26109132	Cod, coated, baked or broiled, made with margarine	4.86	4.5	0.22
26109142	Cod, coated, fried, made with margarine	7.63	7.4	0.57
26115122	Flounder, baked or broiled, made with margarine	4.82	2.9	0.14
26115132	Flounder, coated, baked or broiled, made with margarine	6.27	4.5	0.28
26115142	Flounder, coated, fried, made with margarine	8.93	7.4	0.66
26118022	Halibut, baked or broiled, made with margarine	4.08	2.9	0.12
26118032	Halibut, coated, baked or broiled, made with margarine	5.71	4.5	0.26
26118042	Halibut, coated, fried, made with margarine	8.42	7.4	0.62
26127122	Perch, baked or broiled, made with margarine	3.58	2.9	0.11
26127132	Perch, coated, baked or broiled, made with margarine	5.33	4.5	0.24
26127142	Perch, coated, fried, made with margarine	8.07	7.4	0.60
26137122	Salmon, baked or broiled, made with margarine	7.84	2.9	0.23
26137132	Salmon, coated, baked or broiled, made with margarine	8.58	4.5	0.39
26137142	Salmon, coated, fried, made with margarine	11.04	7.4	0.82
26151122	Trout, baked or broiled, made with margarine	10.01	2.9	0.29
26151132	Trout, coated, baked or broiled, made with margarine	10.24	4.5	0.46
26151142	Trout, coated, fried, made with margarine	12.56	7.4	0.93
26157122	Whiting, baked or broiled, made with margarine	4.06	2.9	0.12
26157132	Whiting, coated, baked or broiled, made with margarine	5.69	4.5	0.26
26157142	Whiting, coated, fried, made with margarine	8.40	7.4	0.62
26158012	Tilapia, baked or broiled, made with margarine	4.54	2.9	0.13
26158022	Tilapia, coated, baked or broiled, made with margarine	6.06	4.5	0.27

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
26158032	Tilapia, coated, fried, made with margarine	8.73	7.4	0.65
26319122	Shrimp, baked or broiled, made with margarine	3.60	2.9	0.11
26319142	Shrimp, coated, fried, made with margarine	8.44	7.4	0.63
26319162	Shrimp, coated, baked or broiled, made with margarine	5.28	4.5	0.24
31105020	Egg, whole, fried with margarine	13.11	6.5	0.86
32130000	Egg omelet or scrambled egg, made with margarine	13.11	6.5	0.86
32130100	Egg omelet or scrambled egg, with cheese, made with margarine	15.05	5.7	0.86
32130200	Egg omelet or scrambled egg, with meat, made with margarine	13.69	5.7	0.78
32130300	Egg omelet or scrambled egg, with cheese and meat, made with margarine	15.26	5.3	0.81
32400060	Egg white omelet, scrambled, or fried, made with margarine	4.40	6.5	0.29
56205006	Rice, white, cooked, made with margarine	2.12	2.9	0.06
56205016	Rice, brown, cooked, made with margarine	2.46	2.3	0.06
71103050	Potato, boiled, from fresh, peel not eaten, made with margarine	3.18	4.7	0.15
71103150	Potato, boiled, from fresh, peel eaten, made with margarine	3.21	4.7	0.15
71104090	Potato, roasted, from fresh, peel eaten, made with margarine	3.21	4.7	0.15
71104150	Potato, roasted, from fresh, peel not eaten, made with margarine	3.18	4.7	0.15
71905100	Plantain, cooked with butter or margarine	2.51	2.9	0.07
72107228	Collards, fresh, cooked with butter or margarine	2.97	2.9	0.09
72107231	Collards, frozen, cooked with butter or margarine	2.57	2.9	0.07
72107234	Collards, canned, cooked with butter or margarine	2.45	2.9	0.07
72125218	Spinach, fresh, cooked with butter or margarine	3.00	2.9	0.09
72125225	Spinach, frozen, cooked with butter or margarine	3.01	2.9	0.09
72125228	Spinach, canned, cooked with butter or margarine	2.66	2.9	0.08
72201224	Broccoli, fresh, cooked with butter or margarine	2.63	2.9	0.08
72201227	Broccoli, frozen, cooked with butter or margarine	2.28	2.9	0.07
73102218	Carrots, fresh, cooked with butter or margarine	2.50	2.9	0.07
73102225	Carrots, frozen, cooked with butter or margarine	2.83	2.9	0.08
73102228	Carrots, canned, cooked with butter or margarine	2.36	2.9	0.07
73103022	Carrots, canned, reduced sodium, cooked with butter or margarine	2.31	2.9	0.07
73402023	Sweet potato, baked, peel eaten, made with margarine	3.09	4.5	0.14
73403023	Sweet potato, baked, peel not eaten, made with margarine	3.23	4.7	0.15
73405023	Sweet potato, boiled, made with margarine	3.22	4.7	0.15

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
75202028	Asparagus, fresh, cooked with butter or margarine	2.46	2.9	0.07
75202032	Asparagus, frozen, cooked with butter or margarine	2.58	2.9	0.07
75202035	Asparagus, canned, cooked with butter or margarine	2.81	2.9	0.08
75205045	Green beans, fresh, cooked with butter or margarine	2.48	2.9	0.07
75205048	Green beans, frozen, cooked with butter or margarine	2.33	2.9	0.07
75205051	Green beans, canned, cooked with butter or margarine	2.55	2.9	0.07
75205132	Green beans, canned, reduced sodium, cooked with butter or margarine	2.62	2.9	0.08
75211032	Cabbage, green, cooked with butter or margarine	2.36	2.9	0.07
75214028	Cauliflower, fresh, cooked with butter or margarine	2.54	2.9	0.07
75214031	Cauliflower, frozen, cooked with butter or margarine	2.38	2.9	0.07
75216135	Corn, fresh, cooked with butter or margarine	3.48	2.9	0.10
75216138	Corn, frozen, cooked with butter or margarine	2.82	2.9	0.08
75216142	Corn, canned, cooked with butter or margarine	3.36	2.9	0.10
75216322	Corn, canned, reduced sodium, cooked with butter or margarine	3.14	2.9	0.09
75219034	Mushrooms, fresh, cooked with butter or margarine	3.12	2.9	0.09
75224044	Green peas, fresh, cooked with butter or margarine	2.66	2.9	0.08
75224047	Green peas, frozen, cooked with butter or margarine	2.43	2.9	0.07
75224050	Green peas, canned, cooked with butter or margarine	2.95	2.9	0.09
75224132	Green peas, canned, reduced sodium, cooked with butter or margarine	3.08	2.9	0.09
75233028	Summer squash, yellow or green, fresh, cooked with butter or margarine	2.89	2.9	0.08
75233031	Summer squash, yellow or green, frozen, cooked with butter or margarine	2.33	2.9	0.07
75233034	Summer squash, yellow or green, canned, cooked with butter or margarine	2.23	2.9	0.06
75311028	Classic mixed vegetables, frozen, cooked with butter or margarine	2.31	2.9	0.07
75311031	Classic mixed vegetables, canned, cooked with butter or margarine	2.81	2.9	0.08
75311122	Classic mixed vegetables, canned, reduced sodium, cooked with butter or margarine	2.79	2.9	0.08
Mayonnaise and Mayonnaise-Type Dressings				
27220080	Ham croquette	20.70	10.3	2.14
27246300	Chicken or turkey cake, patty, or croquette	18.70	10.3	1.92
27250040	Crab cake	14.75	10.3	1.52
27250070	Salmon cake or patty	18.16	10.3	1.87
27250160	Tuna cake or patty	14.88	10.3	1.53
27250210	Clam cake or patty	15.31	10.3	1.57
27250220	Oyster fritter	16.22	10.5	1.71

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27250400	Shrimp cake or patty	15.45	10.3	1.59
27416250	Beef salad	19.32	20.7	4.01
27420020	Ham or pork salad	18.09	20.3	3.67
27446200	Chicken or turkey salad, made with mayonnaise	18.76	20.7	3.88
27446205	Chicken or turkey salad with nuts and/or fruits	17.85	16.7	2.98
27446220	Chicken or turkey salad with egg	18.06	18.9	3.41
27446225	Chicken or turkey salad, made with light mayonnaise	8.15	22.1	1.80
27446230	Chicken or turkey salad, made with mayonnaise-type salad dressing	7.95	21.8	1.73
27446235	Chicken or turkey salad, made with light mayonnaise-type salad dressing	8.15	22.1	1.80
27446260	Chicken or turkey salad, made with any type of fat free dressing	3.81	23.3	0.89
27450010	Crab salad	15.89	20.7	3.28
27450020	Lobster salad	15.40	19.9	3.07
27450030	Salmon salad	17.36	19.6	3.40
27450060	Tuna salad, made with mayonnaise	15.85	20.4	3.24
27450061	Tuna salad, made with light mayonnaise	5.40	21.9	1.18
27450062	Tuna salad, made with mayonnaise-type salad dressing	5.19	21.5	1.12
27450063	Tuna salad, made with light mayonnaise-type salad dressing	5.40	21.9	1.18
27450068	Tuna salad, made with any type of fat free dressing	1.15	23.0	0.26
27450070	Shrimp salad	16.60	21.2	3.52
27450080	Seafood salad	15.95	20.6	3.28
27450090	Tuna salad with cheese	17.58	18.5	3.25
27450100	Tuna salad with egg	15.40	18.7	2.88
27450130	Crab salad made with imitation crab	16.28	21.4	3.48
27570310	Hors d'oeuvres, with spread	4.99	8.9	0.45
32102000	Egg, deviled	15.90	8.3	1.33
32103000	Egg salad, made with mayonnaise	23.14	19.6	4.53
32103015	Egg salad, made with light mayonnaise	13.00	21.0	2.73
32103020	Egg salad, made with mayonnaise-type salad dressing	12.83	20.6	2.65
32103025	Egg salad, made with light mayonnaise-type salad dressing	13.00	21.0	2.73
32103050	Egg Salad, made with any type of fat free dressing	8.82	22.1	1.95
63401010	Apple salad with dressing	13.92	12.5	1.74
63402950	Fruit salad, excluding citrus fruits, with salad dressing or mayonnaise	20.30	19.9	4.03
63402980	Fruit salad, excluding citrus fruits, with marshmallows	19.12	18.7	3.57
63403010	Fruit salad, including citrus fruits, with salad dressing or mayonnaise	19.90	19.5	3.87

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63403040	Fruit salad, including citrus fruits, with marshmallows	18.76	18.3	3.44
63413010	Pineapple salad with dressing	5.71	7.5	0.43
71600950	Potato salad with egg, from restaurant	11.35	13.3	1.51
71601010	Potato salad with egg, made with mayonnaise	9.40	14.0	1.31
71601015	Potato salad with egg, made with light mayonnaise	4.46	14.0	0.62
71601020	Potato salad with egg, made with mayonnaise-type salad dressing	4.32	13.7	0.59
71601025	Potato salad with egg, made with light mayonnaise-type salad dressing	4.46	14.0	0.62
71602950	Potato salad, from restaurant	11.45	15.1	1.73
71603010	Potato salad, made with mayonnaise	11.14	14.7	1.64
71603015	Potato salad, made with light mayonnaise	3.65	15.8	0.58
71603020	Potato salad, made with mayonnaise-type salad dressing	3.49	15.5	0.54
71603025	Potato salad, made with light mayonnaise-type salad dressing	3.65	15.8	0.58
73101110	Carrots, raw, salad	15.67	20.7	3.24
73101210	Carrots, raw, salad with apples	15.95	21.1	3.36
75140500	Broccoli salad with cauliflower, cheese, bacon bits, and dressing	22.82	22.9	5.23
75141040	Cabbage salad or coleslaw, made with any type of fat free dressing	0.71	23.0	0.16
75145000	Seven-layer salad, lettuce salad made with a combination of onion, celery, green pepper, peas, mayonnaise, cheese, eggs, and/or bacon	20.73	22.3	4.63
75416500	Pea salad	14.03	18.4	2.59
75416600	Pea salad with cheese	16.02	16.6	2.66
81308100	Fry sauce	56.16	75.0	42.12
99998130	Sauce as ingredient in hamburgers	22.85	30.0	6.86
Salad Dressings (regular and low calorie)				
14670000	Mozzarella cheese, tomato, and basil, with oil and vinegar dressing	10.87	10.2	1.11
27446240	Chicken or turkey salad, made with creamy dressing	13.09	22.1	2.90
27446245	Chicken or turkey salad, made with light creamy dressing	6.36	22.5	1.43
27446250	Chicken or turkey salad, made with Italian dressing	7.84	21.8	1.71
27446255	Chicken or turkey salad, made with light Italian dressing	4.71	22.1	1.04
27450064	Tuna salad, made with creamy dressing	10.29	21.9	2.25
27450065	Tuna salad, made with light creamy dressing	1.16	23.6	0.27
27450066	Tuna salad, made with Italian dressing	5.09	21.5	1.10
27450067	Tuna salad, made with light Italian dressing	2.00	21.9	0.44
32103030	Egg salad, made with creamy dressing	17.68	21.0	3.71

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
32103035	Egg salad, made with light creamy dressing	11.29	21.3	2.41
32103040	Egg salad, made with Italian dressing	12.74	20.6	2.63
32103045	Egg salad, made with light Italian dressing	12.38	19.3	2.39
41203030	Black bean salad	3.85	16.5	0.64
41420100	Miso sauce	41.00	90.0	36.90
71601030	Potato salad with egg, made with creamy dressing	7.91	14.7	1.16
71601035	Potato salad with egg, made with light creamy dressing	3.46	14.9	0.52
71601040	Potato salad with egg, made with Italian dressing	4.42	14.4	0.64
71601045	Potato salad with egg, made with light Italian dressing	2.35	14.7	0.34
71601050	Potato salad with egg, made with any type of fat free dressing	1.74	14.8	0.26
71603030	Potato salad, made with creamy dressing	7.53	16.7	1.26
71603035	Potato salad, made with light creamy dressing	2.47	17.0	0.42
71603040	Potato salad, made with Italian dressing	3.56	16.4	0.58
71603045	Potato salad, made with light Italian dressing	1.20	16.7	0.20
71603050	Potato salad, made with any type of fat free dressing	0.58	16.7	0.10
75140510	Broccoli slaw salad	8.12	22.8	1.85
75141000	Cabbage salad or coleslaw, made with coleslaw dressing	7.89	22.6	1.78
75141005	Cabbage salad or coleslaw, made with light coleslaw dressing	4.87	23.9	1.16
75141020	Cabbage salad or coleslaw, made with Italian dressing	4.64	21.5	1.00
75141025	Cabbage salad or coleslaw, made with light Italian dressing	1.55	21.9	0.34
75141030	Cabbage salad or coleslaw, made with creamy dressing	9.84	21.9	2.15
75141035	Cabbage salad or coleslaw, made with light creamy dressing	0.72	23.6	0.17
75141100	Cabbage salad or coleslaw with apples and/or raisins, with dressing	6.26	17.8	1.12
75141200	Cabbage salad or coleslaw with pineapple, with dressing	6.81	22.4	1.52
75142500	Cucumber salad, made with sour cream dressing	5.51	28.1	1.55
75142550	Cucumber salad, made with Italian dressing	9.93	30.9	3.07
75302080	Bean salad, yellow and/or green string beans	5.00	22.4	1.12
Ice Cream and Frozen Milk Desserts				
13120800	Ice cream soda, flavors other than chocolate	2.90	26.3	0.76
13120810	Ice cream soda, chocolate	2.90	26.3	0.76
White Sauces and Milk Gravies				
27113000	Beef with cream or white sauce	9.24	29.8	2.76
27120120	Sausage gravy	13.42	80.0	10.74
27135030	Veal with cream sauce	7.38	29.8	2.20
27143000	Chicken or turkey with cream sauce	7.41	29.9	2.21
27150010	Fish with cream or white sauce, not tuna or lobster	3.57	29.9	1.07

Food Code	Main food description	Total Fat (g/100g)	Recipe Fraction (%)	OPO-Fat Use Level (g/100g)
27150120	Tuna with cream or white sauce	3.64	29.9	1.09
27212300	Beef and noodles with cream or white sauce	5.26	27.9	1.47
27213300	Beef and rice with cream sauce	5.17	26.9	1.39
27220020	Ham and noodles with cream or white sauce	5.37	28.5	1.53
27220190	Sausage and noodles with cream or white sauce	7.73	27.2	2.10
27235750	Veal and noodles with cream or white sauce	5.64	26.9	1.52
27236000	Venison or deer and noodles with cream or white sauce	5.30	26.9	1.43
27242300	Chicken or turkey and noodles with cream or white sauce	5.44	28.3	1.54
27250126	Shrimp and noodles with cream or white sauce	5.25	29.7	1.56
27250610	Tuna noodle casserole with cream or white sauce	7.18	32.7	2.35
27250820	Fish and rice with cream sauce	4.92	26.7	1.31
27350080	Tuna noodle casserole with vegetables, cream or white sauce	6.12	27.6	1.69
27430580	Veal with vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, cream or white sauce	6.73	38.3	2.58
27430590	Veal with vegetables excluding carrots, broccoli, and dark-green leafy; and potatoes, cream or white sauce	6.27	23.6	1.48
32101000	Egg, creamed	10.22	54.4	5.56
71401039	Potato, french fries, with cheese, fast food / restaurant	14.13	34.8	4.91
71401050	Potato, french fries, with chili and cheese, fast food / restaurant	11.38	25.8	2.94
71402500	Potato, french fries, with cheese	14.13	34.8	4.91
71402510	Potato, french fries, with chili and cheese	11.38	25.8	2.94
Meat analogs				
41812450	Vegetarian chili, made with meat substitute	2.93	17.2	0.50
41812850	Vegetarian stroganoff	10.30	35.8	3.69
41901020	Soyburger, meatless, with cheese on bun	6.60	78.0	5.15

From: 土屋　欣也
To: Kampmeyer, Christopher
Subject: RE: [EXTERNAL] RE: Regarding your submission to FDA"s GRAS Notification Program
Date: Monday, March 14, 2022 11:32:44 PM
Attachments: image002.png
image003.png
image004.png
image005.png
image006.png
image008.png
image009.png
image010.png
image011.png
image012.png
image013.png
image014.png
image015.png
image016.png
image017.png
image018.png
image052.png
image053.png

Dear Mr. Kampmeyer:

Nisshin OilliO confirms that inclusion of the word “confidential” on Appendix D was an oversight. We confirm that the entirety of Appendix D titled: “Estimated Daily Intake of OPO Fat by the U.S. Population from Proposed Food Uses (2017-2018 NHANES)” is NOT confidential and can be publicly released on the FDA’s GRAS notice inventory. We apologize for this oversight and hope that this response allows the agency to continue with their review of the notice.

Sincerely,

Kinya Tsuchiya

The Nisshin OilliO Group, Ltd.
Kinya Tsuchiya
Officer
General Manager
Central Research Laboratory

From: Kampmeyer, Christopher <Christopher.Kampmeyer@fda.hhs.gov>
Sent: Thursday, March 10, 2022 5:16 AM
To: 土屋　欣也 <k-tsuchiya@nisshin-oillio.com>
Subject: RE: [EXTERNAL] RE: Regarding your submission to FDA's GRAS Notification Program

Dear Mr. Tsuchiya,

I am writing with an additional request for clarification regarding your submission dated November 3, 2021, regarding uses of “1,3-dioleoyl-2-palmitoyl glycerol (OPO)” in food to the GRAS Notification Program. During our prefiling evaluation, we noted that the entirety of Appendix D is also identified as “confidential.” Could you please clarify whether this information is in fact confidential or not, in response to this email?

Thank you,
Chris

Chris Kampmeyer, M.S.
Regulatory Review Scientist

Office of Food Additive Safety
Center for Food Safety and Applied Nutrition
U.S. Food and Drug Administration
christopher.kampmeyer@fda.hhs.gov

From: Kampmeyer, Christopher
Sent: Thursday, February 17, 2022 12:28 PM
To: 土屋 欣也 <k-tsuchiya@nisshin-oillio.com>
Subject: RE: [EXTERNAL] RE: Regarding your submission to FDA's GRAS Notification Program

Thank you—I am writing to confirm receipt.

Best regards,
Chris

Chris Kampmeyer, M.S.
Regulatory Review Scientist

Office of Food Additive Safety
Center for Food Safety and Applied Nutrition
U.S. Food and Drug Administration
christopher.kampmeyer@fda.hhs.gov

From: 土屋 欣也 <k-tsuchiya@nisshin-oillio.com>
Sent: Wednesday, February 16, 2022 11:12 PM
To: Kampmeyer, Christopher <Christopher.Kampmeyer@fda.hhs.gov>
Subject: [EXTERNAL] RE: Regarding your submission to FDA's GRAS Notification Program

Dear Mr. Kampmeyer:

Thank you for your question. Nisshin confirms that the entirety of Appendix A is NOT confidential and can be disclosed on the FDA's GRAS notification inventory. We understand that the entirety of Appendix A will become publicly available once disclosed on the GRAS inventory list. If a replacement document for Appendix A is needed without the confidential watermark, we are able to provide one. Nisshin also confirms that the notice does not contain any trade secret information and therefore the entirety of the notice can be shared with the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA).

Kind Regards,

Kinya Tsuchiya

The Nisshin OilliO Group, Ltd.
Kinya Tsuchiya
Officer
General Manager
Central Research Laboratory

From: Kampmeyer, Christopher <Christopher.Kampmeyer@fda.hhs.gov>
Sent: Wednesday, February 9, 2022 2:59 AM
To: 土屋 欣也 <k-tsuchiya@nisshin-oillio.com>
Subject: Regarding your submission to FDA's GRAS Notification Program

Dear Mr. Tsuchiya:

I am writing regarding your submission dated November 3, 2021, regarding uses of "1,3-dioleoyl-2-palmitoyl glycerol (OPO)" in food to the GRAS Notification Program. During our prefiling evaluation, we noted that the entirety of Appendix A is identified as "confidential." Could you please clarify

whether this information is in fact confidential or not, in response to this email? We also noted in Part 1 of the notice is missing an FSIS statement to explicitly state that you authorize us to send any trade secrets to the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture; or a statement asking us to exclude any trade secrets from the copy of the GRAS notice that we will send to FSIS, per 21 CFR 170.225)(c)(11). Could you please provide an FSIS statement, in response to this email? Alternatively, please request that we cease to evaluate this submission and resubmit the notice (with corrections) in its entirety.

Thank you,
Chris

Chris Kampmeyer, M.S.
Regulatory Review Scientist

Office of Food Additive Safety
Center for Food Safety and Applied Nutrition
U.S. Food and Drug Administration
christopher.kampmeyer@fda.hhs.gov

From:	Morissette, Rachel
To:	土屋 欣也
Bcc:	Kaneko, Kotaro; DeGroot, Danica; Srinivasan, Jannavi; Edwards, Alison; Anderson, Ellen
Subject:	RE: [EXTERNAL] Re: follow-up to email request for phone call to discuss GRN 001050
Date:	Friday, July 1, 2022 11:49:00 AM
Attachments:	image009.png image010.png image011.png image012.png image013.png image014.png image015.png image001.png image016.png image017.png image018.png image019.png image020.png

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Dear Mr. Tsuchiya,

Thank you for your email. Please let me clarify what we are asking for and why with regards to our evaluation of this notice. We have identified significant issues with the data and safety narrative presented in GRN 001050. There are gaps and missing data in the GRAS notice that both FDA and USDA require in order to proceed with our evaluation of your notice. I outlined some of the high-level issues we have in my original email from June 27, 2022; however, as I stated before, this is not an exhaustive list. We have many more questions beyond what I stated in my email below. Because of these issues, we are unable to state that we have no questions regarding your GRAS conclusion for the intended use of high 2-palmitic acid vegetable oil at this time. As such, we are recommending that you request that FDA cease its evaluation of GRN 001050 without prejudice. What that means is that we would stop our evaluation and you would withdraw the notice. You would then receive a "cease to evaluate" letter, which basically states that FDA agrees to stop its evaluation and that you as the notifier can resubmit a revised GRAS notice. At a later date, after you have revised the notice and included the missing data and information, you could resubmit the notice and we would evaluate it as a new notice.

Because the issues we identified would require a significant rewrite of the current notice, and because the GRAS process is not meant to be iterative, this is the route most notifiers choose to take to ensure that they can resubmit a revised notice, which would be publicly available on our online inventory, and that addresses the problems identified in the original notice. Most notifiers are successful the second time they submit, although that would depend on the quality of the resubmission. Additionally, we typically request that notifiers respond to our questions within 10 business days: you stated that more time would be needed and that would not be conducive to the timeline of a GRAS notice evaluation. We do not see a path forward to a "no questions" letter for GRN 001050; therefore, we strongly recommend that you request we cease our evaluation of this notice. After we receive your request to cease our evaluation (via email), we could then schedule a follow-up meeting, or provide some sort of written feedback, to discuss the deficiencies with GRN 001050 and what we would recommend to revise in a new notice. Please note that a pre-submission meeting is meant to provide a broad guidance about a notifier's potential submission. It is then up to the notifier to provide FDA with a complete submission that supports their GRAS conclusion.

Please note that the GRAS Final Rule (81 FR 54959, p. 55009) states that although we expect to contact you when we have questions, whether we intend to provide you with an opportunity to submit an amendment to a GRAS notice before responding to the notice has been, and will continue to be, a matter committed to our discretion. Some factors mentioned regarding whether we intend to provide you with an opportunity to submit an amendment to a GRAS notice include whether our questions can be addressed by a timely, clarifying amendment and whether we question whether GRAS criteria are satisfied, even if our evaluation does not identify a safety concern.

If you choose not to ask us to cease to evaluate at this time, we would then move forward with a "no basis" letter, stating that it is FDA's opinion that there is no basis for GRAS for your intended use of high 2-palmitic acid vegetable oil based on the data and information we have received from you. This letter would also be publicly posted on our online inventory. Since it sounds like you prefer to not have a phone call, you can respond via email. We request that you let us know your decision within 10 business days (by July 15, 2022). I hope this information is helpful in clarifying our position and the status of GRN 001050.

Sincerely,

Rachel Morissette, Ph.D.
Regulatory Review Scientist/Biologist

Division of Food Ingredients
Office of Food Additive Safety
Center for Food Safety and Applied Nutrition
U.S. Food and Drug Administration
rachel.morissette@fda.hhs.gov

FDA U.S. FOOD & DRUG ADMINISTRATION

I GOT MY COVID-19 VACCINATION

From: 土屋　欣也 <k-tsuchiya@nisshin-oillio.com>
Sent: Friday, July 1, 2022 8:16 AM
To: Morissette, Rachel <Rachel.Morissette@fda.hhs.gov>
Subject: [EXTERNAL] Re: follow-up to email request for phone call to discuss GRN 001050

Dear Rachel,

Thank you for your messages, but, needless to say, I am a little confused.
We had already dealt with the issues raised by the FDA, and that is why we were able to submit the Notice.

I must go over your questions thoroughly with my colleagues, which is going to take some time. Thus a phone call at the suggested dates is quite difficult for us.

When you say:
Alternatively to a phone call, you can request that we cease our evaluation of this notice at this time via email
do you mean a “temporary” cease of evaluation or permanent? It is NOT our intention to ask you to cease your evaluation of this GRAS Notice altogether, if that is what you mean.

And please let me know what you mean when you say that you “can provide follow-up information at a later date.” ?

May we respond to your questions via email, so that we would not need to worry about time difference and difficulties understanding English over the phone. (Unfortunately, English is not our first language.)

I look forward to your reply.

Sincerely yours,
Kinya Tsuchiya

Outlook for iOS を入手

差出人: Morissette, Rachel <Rachel.Morissette@fda.hhs.gov>
送信日時: 木曜日, 6月 30, 2022 11:18 午後
宛先: 土屋 欣也 <k-tsuchiya@nisshin-oillio.com>
件名: follow-up to email request for phone call to discuss GRN 001050

Dear Mr. Tsuchiya,

I am following up on my email from Monday regarding our request for a phone call to discuss our concerns with GRN 001050. The following changes to our schedule are indicated below in red. Alternatively to a phone call, you can request that we cease our evaluation of this notice at this time

via email and we can provide follow-up information at a later date. Please let us know as soon as possible how you wish to proceed.

Best regards,

Rachel

Rachel Morissette, Ph.D.
Regulatory Review Scientist/Biologist

Division of Food Ingredients
Office of Food Additive Safety
Center for Food Safety and Applied Nutrition
U.S. Food and Drug Administration
rachel.morissette@fda.hhs.gov

From: Morissette, Rachel
Sent: Monday, June 27, 2022 1:25 PM
To: 土屋 欣也 <k-tsuchiya@nisshin-oillio.com>
Subject: request for phone call to discuss GRN 001050

Dear Mr. Tsuchiya,

We are requesting a phone call to discuss our concerns with GRN 001050. I'm including a list of the high level points we would like to discuss during this meeting, although this is not an exhaustive list of our questions for this notice. We are recommending that you ask us to cease our evaluation of this GRAS notice at this time, but we can also discuss that during the call. I'm providing some potential dates and times that would work for our team. If none of these work, please suggest some options as we can try to accommodate your schedule. Our schedules fill up quickly, so we appreciate a response as soon as possible. Thank you for your consideration and attention to this matter.

~~Friday, July 1: 10-2 pm EDT~~
Wednesday, July 6: 10-11 am or 1:30-2:30 pm
~~Thursday, July 7: 10-11 am~~
Friday, July 8, 10-12 pm or 2-3 pm
Monday, July 11: 11-1 pm

Wednesday, July 13: 1-3 pm
Thursday, July 14: 10-12 pm or 1-3 pm
Friday, July 15: 10-1 pm

Discussion topics:

Chemistry

1. Both FDA and USDA have questions regarding the intended use of your high 2-palmitic acid vegetable oil, particularly in products under USDA jurisdiction.

2. The notice provides limited information about the method of manufacture, including information regarding the Lipase DN enzyme and its immobilization, and does not include sufficient information to characterize the activity and composition of the enzyme preparation.

3. The notice states that "OPO-Fat is manufactured from the same materials (palm stearin and oleic acid) using similar processes as these other high 2-palmitic vegetable oils," as in GRNs 000131 and 000192. It is not clear from the description if the production method is the same as in the cited GRNs with respect to the enzymes used and the refining and processing steps. The notice as written does not provide enough information to make these comparisons.

4. The heavy metal specifications in a GRAS notice should be based on results of batch analyses of the high-2 palmitic acid vegetable oil produced in accordance with cGMPs. The manufacturing summary should address the processing steps that remove impurities, such as heavy metals and contaminants; the specifications should reflect the manufacturing as demonstrated by the batch analyses. We note, for example, that the mercury specification is higher than the limit of detection (LOD) by more than an order of magnitude, while batch analyses are below the LOD.

5. You describe the presence of MCPDE and GE in the high-2 palmitic acid vegetable oil and efforts to minimize formation of these contaminants by modifying the deodorization method. However, we have questions regarding the information in GRN 001050 supporting the use of high-3 palmitic acid vegetable oil (containing these impurities) in infant formula.

6. The stability data in Table 2.4-1 of GRN 001050 is presented for high-2 palmitic acid vegetable oil produced using a slightly different method of manufacture, with reduced deodorization temperature and, possibly, extended deodorization time. The composition of the oil and residual impurities may influence stability; hence, we would still have questions regarding the stability of the high-2 palmitic acid vegetable oil produced using the new method.

7. It appears that the GRAS Panel statement provided to support the general recognition of

safety of your ingredient was based on an earlier dietary exposure estimate (from GRN 000192) and appears to have preceded the method change (reduced temperature, longer deodorization time) and discussion of MCPDEs and GEs in GRN 001050. If you choose to use a GRAS Panel statement to show expert consensus of safety of high 2-palmitic acid vegetable oil for its intended use, the information presented to the GRAS panel needs to reflect the current data supporting the uses presented in the notice.

Toxicology

8. The safety narrative in the notice is lacking information in the following areas:

    a. Discussion and comparison of the article of commerce to other interesterified palm oils used as test articles in recently published studies (some examples are listed below, though this list is not exhaustive) and why this new information is not expected to be a safety concern for high 2-palmitic acid vegetable oil.

        Menta PLR, Andrade MER, de Castro LF, et al. Interesterified palm oil increases intestinal permeability, promotes bacterial translocation, alters inflammatory parameters and tight-junction protein genic expression in Swiss mice. Food Res Int. 2022;151:110897. doi:10.1016/j.foodres.2021.110897

        Miyamoto JÉ, Reginato A, Portovedo M, et al. Interesterified palm oil impairs glucose homeostasis and induces deleterious effects in liver of Swiss mice. Metabolism. 2020;112:154350. doi:10.1016/j.metabol.2020.154350

    b. Discussion of the similarities and differences between the article of commerce and the notified ingredients in GRNs 000131 and 000192 and why any differences are not expected to be a safety concern.

    c. A specific safety discussion for the use of high 2-palmitic acid vegetable oil in a preterm infant population, including ADME parameters and any other physiologic differences between preterm and term infants that may impact the safety conclusion for high 2-palmitic acid vegetable oil.

9. Purported benefits of an ingredient are not considered as part of a GRAS notice evaluation. Therefore, it is not appropriate to address the potential benefits of replacing trans-fat-containing oil with high-2 palmitic acid vegetable oil in the safety narrative.

10. The notice states that a literature search was conducted through October 2018. An updated literature search should be provided for this notice.

Sincerely,

Rachel Morissette, Ph.D.
Regulatory Review Scientist/Biologist

Division of Food Ingredients
Office of Food Additive Safety
Center for Food Safety and Applied Nutrition
U.S. Food and Drug Administration
rachel.morissette@fda.hhs.gov

※当社セキュリティ対策のため、URLに検査用の文字列が追記される場合があります。

From: 土屋 欣也
To: Morissette, Rachel
Subject: [EXTERNAL] Request to cease evaluation of GRN 001050
Date: Tuesday, July 12, 2022 4:00:03 AM

Dear Dr. Rachel Morissette,

Thank you for providing the additional clarification.
The Nisshin OilliO Group hereby requests that FDA cease its evaluation of GRN 001050 without prejudice. However, Nisshin OilliO team would still like to schedule a meeting on a later date to discuss any specific concerns or questions posed by the evaluators. (A written feedback would also be very much appreciated.)

Kind regards,
Kinya Tsuchiya