GRAS Conclusion for the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages

SUBMITTED BY:

BASF Corporation
Florham Park, NJ 07932
USA

SUBMITTED TO:

U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
Office of Food Additive Safety
HFS-200
5100 Paint Branch Parkway
College Park, MD 20740-3835

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May 26, 2020

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List of Acronyms

AAS-ICP	atomic absorption spectroscopy inductively coupled plasma
CFR	Code of Federal Regulations
CFU	colony forming unit
cGMP	current good manufacturing practice
COA	Certificate of analysis
CSFII	Continuing Survey of Food Intakes by Individuals
DH	degree of hydrolysis
DON	Deoxynivalenol
EC	European Commission
EDI	estimated daily intake
FAO	Food and Agriculture Organization of the United Nations
FARE	Foods Analysis and Residue Evaluation
FCC	Food Chemicals Codex
FD&C	Food, Drug, and Cosmetic
FDA	Food and Drug Administration
FNDDS	Food and Nutrient Database for Dietary Studies
FPIES	food protein-induced enterocolitis syndrome
IAC-LC-FLD	immunoaffinity column - liquid chromatography - fluorescence detector
IOM	Institute of Medicine
JECFA	Joint FAO/WHO Expert Committee on Food Additives
LC-MS	liquid chromatography - mass spectrometry
N	Nitrogen
NCHS	National Center for Health Statistics
NHANES	National Health and Nutrition Examination Survey
PCB	polychlorinated biphenyls
PDCAAS	protein digestibility-corrected amino acid score
PE-LD	low-density polyethylene
PRI	Population Reference Intake
RACC	Reference Amount Customarily Consumed
RDA	Recommended Dietary Allowance
U.S. DHHS	U.S. Department of Health and Human Services
UL	Tolerable Upper Intake Level
US	United States
USDA	United States Department of Agriculture
WHO	World Health Organization
WWEIA	What We Eat in America

Part 1: Signed Statements and Certification

BASF Corporation, submits to the U.S. Food and Drug Administration (FDA) this generally recognized as safe (GRAS) notice in accordance with the 21 CFR part 170, subpart E.

Name and Address of Notifier

BASF Corporation
Florham Park, NJ 07932
USA

Name of GRAS Substance

The substance that is the subject of this GRAS notice is rice protein hydrolysate (PeptAIde™).

Intended Use and Consumer Exposure

Rice protein hydrolysate (PeptAIde™) is intended for use as a nutrient source at use level ranging from 1.0 to 64.3% PeptAIde™ in select foods and beverages, 20 g per serving in sports nutrition protein bars, and 25 g per serving in protein powders/protein squeezes. The intended uses of PeptAIde™ are substitutional for existing uses of rice protein recognized as GRAS (protein powders/squeezes; bread/rolls; health bars (other than protein bars) and grain bars; flavored milk drinks; yogurt; frozen yogurt; fruit smoothies; meat alternatives and imitation meat products vegetable/tomato juice including vegetable smoothies; prepared soups, dry soup mixes, and condensed soups), new uses in high protein cookies and vegetable and nut-based milk analogues, and use of a higher concentration in high protein bars; non-milk-based meal replacements; high protein ready-to-eat breakfast cereals; soy/imitation milks; and milk-based meal replacements.

Basis for Conclusion of GRAS Status

BASF's conclusion of GRAS status for the intended use of rice protein hydrolysate (PeptAIde™) as a nutrient source in a variety of foods and beverages is based on scientific procedures in accord with 21 CFR §170.30(a) and (b).

Pre-Market Approval Exclusion Claim

Use of PeptAIde™ is not subject to the pre-market approval requirements of the Federal Food, Drug, and Cosmetic Act because BASF has concluded that such use is generally recognized as safe (GRAS) through scientific procedures.

Availability of Information

The data and information that serve as the basis for this GRAS conclusion, as well as the information that has become available since the GRAS conclusion, will be sent to the FDA upon request, or are available for the FDA's review and copying during customary business hours at the office of Nga Tran at Exponent Inc., 1150 Connecticut Ave, NW, Suite 1100, Washington, DC 20036.

Exemptions from Disclosure

It is our view that none of the data and information in Parts 2 through 7 of the GRAS notice are exempt from disclosure under the Freedom of Information Act (FOIA).

Certification Statement

On behalf of BASF. I hereby certify that, to the best of my knowledge, this GRAS notice is a complete, representative, and balanced submission that includes unfavorable, as well as favorable information, known to me and pertinent to the evaluation of the safety and GRAS status of the use of the substance.

May 26, 2020

Name: Haresh P. Madeka, PhD. Date
Title: Sr. Regulatory and External Affairs Manager
Human Nutrition, North America
Company: BASF Corporation

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

Identity

The substance that is the subject of this dossier is a hydrolyzed rice protein concentrate, also called rice protein hydrolysate, that will be marketed under the trade name PeptAIde™.

The tradename PeptAIde™ will be used throughout this GRAS notice

PeptAIde™ is made from protein derived from non-GMO *Oryza sativa* whole-grain brown rice. *Oryza sativa* possesses a long, well documented history of use with domestication, commercialization, and consumption dating back more than 9,000 years. Brown rice protein is a food listed in the United States Department of Agriculture (USDA) branded food product database.

Nutrient Composition and Amino acid Profile of PeptAIde™

The typical nutritional composition of PeptAIde™ is provided in Table 1, as well as data from four non-consecutive batches. Typically, protein accounts for 75-85%, fat accounts for 3-6%, and dietary fiber accounts for 5-10% of the total weight of PeptAIde™. The ash and moisture content are each typically <5%. The typical amino acid profile for PeptAIde™ is provided in Table 2. Further details on the composition of PeptAIde™ are presented in the safety chapter in this document.

Table 1. Typical Nutritional Composition for PeptAIde™ and Data from of Four Non-consecutive Batches of PeptAIde™

Nutrient	Unit per 100 g	Typical values	Batch			
			#1 (98280) (99353)	#2 (98523/ 98514)	#3 (98524)	#4 (20667018)
Energy	Kcal	370-400	376	372	383	399
Protein (N * 6.25)	G	75-85	78.2	81.3	79.0	81.3
Moisture	G	<5	4.1	2.8	3.6	1.8
Ash	G	<5	4.7	4.9	3.8	4.8
Total fat	G	3-6	5.7	3.4	4.7	5.9
Saturated fatty acids	G	<3	2.9	0.9	2.1	1.5
Mono-unsaturated fatty acids	G	<3	1.5	1.2	2.3	1.7
Poly-unsaturated fatty acids	G	<3	1.0	1.3	0.3	2.3
Trans fatty acids	G	<1	0.03	< 0.01	< 0.09	0.05
Dietary fiber	G	5-15	7.9	7.2	5.3	10.5
Iron	Mg	20-35	26	31	15	35

Nutrient	Unit per 100 g	Typical values	Batch			
			#1 (98280) (99353)	#2 (98523/ 98514)	#3 (98524)	#4 (20667018)
Sodium[1]	Mg	1,400-1,900	1,700	1,400	1,450	1,815
Potassium	Mg	<500	15	310	11	11
Calcium	Mg	<500	100	160	66	40

[1] Where more than one analytical test result to Sodium is available, the average number is reported in the table.

Table 2. Typical Amino Acid Profile of PeptAIde™

Amino acid	PeptAIde™ (data from 3 batches)
Alanine	4.61 - 6.20
Arginine	6.43 - 8.53
Aspartic acid	7.12 - 9.60
Cystine	2.30 - 2.30
Glutamic acid	14.90 - 19.33
Glycine	3.86 - 5.40
Histidine	1.85 - 2.49
Isoleucine	3.33 - 4.39
Leucine	6.75 - 8.92
Lysine	2.60 - 3.40
Methionine	2.40 - 2.40
Phenylalanine	4.48 - 5.88
Proline	3.74 - 5.08
Serine	4.17 - 5.70
Threonine	2.95 - 3.94
Tryptophan	-*
Tyrosine	4.36 - 5.80
Valine	4.94 - 6.57
g amino acids/100 g	74.09 - 79.24
% Total amino acids	100*

* Tryptophan value not reported by laboratory; the method used in this analysis (ISO 13903:2005) is described as not valid for the determination of tryptophan due to the decomposition by acids used in the method. Value for tryptophan are assumed to be zero in calculation of % of total amino acids.

Manufacturing Information

Raw Material - Brown Rice Protein

The starting raw material that is used by BASF to prepare PeptAIde™ is food grade protein derived from natural brown rice. The typical process to extract brown rice protein from brown rice involves common food process steps like cleaning and soaking brown rice in water; grinding and adding food grade amylase for liquifying the rice starch; decanting and filtering protein from the water-soluble carbohydrates; washing, cleaning, and drying the brown rice protein; and milling and sieving to obtain the finished brown rice protein for human consumption. BASF

purchases its food grade rice protein raw material from qualified and approved suppliers. All raw materials are analyzed to assure compliance with BASF's acceptance criteria for quality and safety, as provided in **Appendix A**.

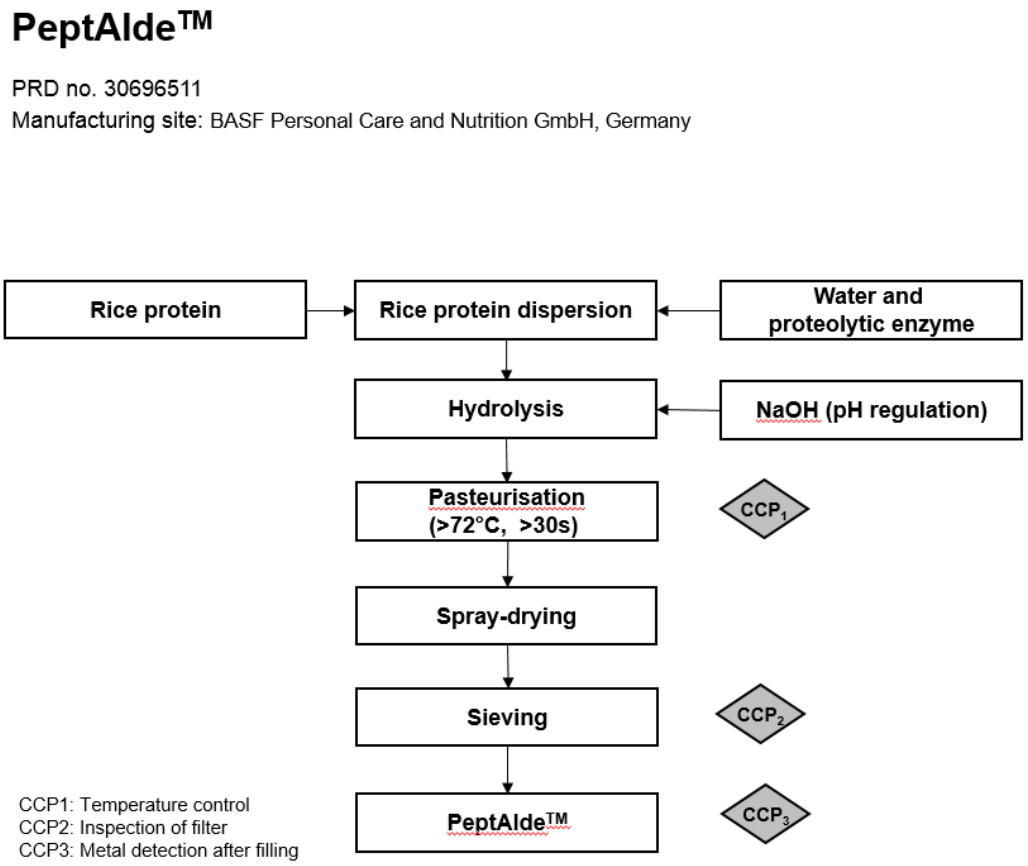
Processing Steps for PeptAIde™

PeptAIde™ is prepared from brown rice protein by hydrolysis in an aqueous dispersion using a protease enzyme preparation. After the hydrolysis is finished, the protease enzyme is inactivated, and the hydrolyzed rice protein is spray dried and packed. The manufacturing steps are detailed below. The process flow diagram is also provided in Figure 1.

1. Hydrolysis: The rice protein is dispersed in potable water and pasteurized at temperatures exceeding 80°C. Then the dispersion is cooled down to temperatures which the enzyme preparation can tolerate[1]. The pH value is controlled and optionally adjusted to approx. 6.5 by addition of caustic (sodium hydroxide or other alkaline hydroxides permitted for such use). Protease is added and hydrolyzation is carried out for several hours in a stirred reactor under monitoring and control of temperature and pH-value. After the hydrolysis is finished the protease enzyme is inactivated by raising the temperature above 80°C.
2. Spray-drying: The rice protein hydrolysate is kept at hot temperatures (>70°C) to avoid potential microbial growth. The hot dispersion is spray dried in a standard spray-drying process with fluid bed cooling. Alternative drying operations such as roller drying, or belt drying are also possible. The spray dried product is sieved and packaged into food packaging units, e.g. multiwall low-density polyethylene (PE-LD) paper bags. Sieving and metal detection is carried out to ensure product safety.

[1] Temperature and pH conditions depend on the specific protease enzyme preparation in use.

Figure 1. Process Flow Diagram



All processing aids used in the manufacturing of PeptAIde™ are food grade and suitable for their intended purpose. Protease enzyme preparations used in the production comply with the recommended purity specifications for food-grade enzymes given by the Joint Food and Agriculture Organization (FAO)/World Health Organization (WHO) Expert Committee on Food Additives (JECFA) and the Food Chemicals Codex (FCC).

Table 3. Information on Processing Aids Used in the Manufacture of PeptAIde™

Material	**Used in step**	**Regulatory Status**
Sodium hydroxide solution (alternatively also other alkaline hydroxides permitted for such use)	All steps	21 CFR 184.1763 (c)(1) - Approved use as pH control agent and processing aid
Endoproteases/endopeptidases, listed in international classification systems, e.g. EC 3.4.21.62, which hydrolyzes internal protein bonds)	Hydrolysis	21 CFR 184.1150 or other enzymes that are declared GRAS by suppliers for intended use
Potable water	Hydrolysis	--

Product Specifications

The product specification and analytical test methods for quality control of PeptAIde™ are summarized in Table 4.

Arsenic specification limit: Inorganic and organic arsenic (monomethylated and dimethylated arsenic) may be found in rice and rice products. The specification limit for PeptAIde™ is based on total arsenic. At present, JECFA has established a tolerable daily intake (TDI) of 0.3 µg/kg/day for inorganic arsenic.[2] Similarly, the US Environmental Protection Agency (EPA) has derived a reference dose (RfD) [3] for inorganic arsenic of 0.3 µg/kg/day. The FDA has established a quality standard limit for inorganic arsenic in bottled water of 10 ppb (21CFR165.110). Assuming the default consumption of 2 liters of water per day containing 10 ppb arsenic and a default 60 kg bw, an intake limit 0.3 µg/kg bw/day could also be derived. Based on the proposed use of PeptAIde™, the 90th percentile EDI of PeptAIde™ for the US population is 25.0 g/day (US adults 19+, see Table 10, EDI section). At the specification limit of 0.2 µg /kg for arsenic, and assuming a default body weight of 60kg, the 90th percentile exposure to arsenic would be 0.08 µg/kg bw/day, which is well below the current TDI for inorganic arsenic. Therefore, it can be concluded that the specification limit for arsenic for PeptAIde™ is adequately protective for its intended use of PeptAIde™.

Table 4. Product Specification for PeptAIde™

Parameter	**Unit**	**Limit**	**Test method**
Appearance	-	Beige to light brown powder	AX-001001 * (visual)
Loss on drying	weight %	≤ 5	CP-002121 * (gravimetric)
pH-value 10% in water	-	7.5-9.0	ISO 4316 (conductivity)
Protein content (N * 6.25)	weight %	≥ 75	ISO 16634-2 (Dumas, volumetric)
Fiber	weight %	≤ 15	AAOC-991.43 or comparable method
Ash	weight %	≤ 7	CP-001024 * (gravimetric)
Microbiological			
Total aerobic mesophilic plate count	cfu/g	≤ 5000	MB-002035 *
Escherichia coli	-	negative/1g	MB-007032 *
Coliforms	cfu/g	≤ 10	MB-006038 *
Bacillus cereus presumptive	cfu/g	≤ 500	DIN EN ISO 7932
Salmonella	-	negative/25g	DIN 10123

[2] Inorganic arsenic was re-reviewed at the Seventy-second meeting of JECFA (JECFA 2011). The inorganic arsenic BMDL for a 0.5% increased incidence of lung cancer was determined by using a range of assumptions to estimate exposure from drinking-water and food with differing concentrations of inorganic arsenic. The $BMDL_{0.5}$ was computed to be 3.0 µg/kg bw/ day. With the lower bound of the range of $BMDL_{01}$ provided by the CONTAM Panel being the same as the current TDI of 0.3 µg/kg bw/day for inorganic arsenic.

[3] https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=278 (access April 3, 2020)

Parameter	Unit	Limit	Test method
Yeasts and molds	cfu/g	≤ 100	MB-002039 *
Heavy metals			
Arsenic	mg/kg	≤ 0.2	AAS-ICP
Cadmium	mg/kg	≤ 0.6	AAS-ICP
Lead	mg/kg	≤0.4	AAS-ICP
Mercury	mg/kg	≤ 0.1	AAS-ICP

* internal test method

The analytical data of 4 non-consecutive batches of PeptAIde™ demonstrating compliance with product specifications are summarized in Table 5. The complete laboratory reports of analytical data can be found in **Appendix B**.

Table 5. Analytical Results of Non-Consecutive Batches of PeptAIde™.

Parameter	Unit	Limit	Batch Number			
			#1 (98280) (99353)	**#2 (98523/ 98514)**	**#3 (98524)**	**#4 (20667018)**
Appearance	-	Beige to light brown powder	complies	complies	complies	complies
Loss on drying	weight %	≤ 5	4.1	2.8	3.6	1.8
Protein content (N * 6.25)	weight %	≥ 75	78.2	81.3	79.0	81.3
pH-value 10% in water	-	7.5-9.0	8.6	8.6	8.7	
Fiber	weight %	≤ 15	7.9	7.2	5.3	10.5
Ash	weight %	≤ 7	4.7	4.9	3.8	4.8
Microbiological						
Total aerobic mesophilic plate counts	cfu/g	≤ 5000	1500	80	40	50
Escherichia coli	-	negative/1g	ND	ND	ND	ND
Coliforms	cfu/g	≤ 10	< 10	< 10	< 10	<10
Bacillus cereus presumptive	cfu/g	≤ 500	100	< 10	< 10	20
Salmonella	-	negative/25g	ND	ND	ND	ND
Yeasts and molds	cfu/g	≤ 100	30	< 10	< 10	<10
Heavy Metals						
Arsenic	mg/kg	< 0.2	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/kg	≤ 0.6	0.3	0.6	0.2	<0.1
Lead	mg/kg	≤0.4	0.2	0.4	0.1	0.1
Mercury	mg/kg	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1	≤ 0.1

BASF routinely monitors PeptAIde™ for mycotoxins. The results of such monitoring for four non-consecutive batches of product are summarized in Table 6.

Table 6. Mycotoxin Monitoring Data for PeptAIde™

Parameter	Unit	Limit	Batch Number			
			#1 (98280) (99353)	#2 (98523/ 98514)	#3 (98524)	#4 (20667018)
Aflatoxin B1	µg/kg		1.01	0.2	0.05	<0.1
Aflatoxin B2			0.04	< 0.1	< 0.01	<0.1
Aflatoxin G1			< 0.01	< 0.1	< 0.01	<0.1
Aflatoxin G2			< 0.01	< 0.1	< 0.01	<0.1
Total Aflatoxins		4.0	1.05	0.2	0.05	<0.4
Ochratoxin A	µg/kg	5	0.6	< 0.2	< 0.2	0.9
Deoxynivalenone	µg/kg	200	< 20	29.0	< 20	81
Zearelenone	µg/kg	75	32	< 10	< 10	<10
Fumonisin B1	µg/kg	1000	< 20	< 20	< 20	< 20
Fumonisin B2	µg/kg		< 20	< 20	< 20	< 20
Fumonisin B1+B2	µg/kg		< 40	< 40	< 40	< 40

As a component of its cGMP, BASF routinely tests PeptAIde™ for pesticides (organo-chlorine pesticides, pyrethroids and organo-phosphorus pesticides) and other environmental contaminants [dioxin/furans, polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons] to ensure a high quality and suitable food ingredient. COAs demonstrating that all tested compounds were either not detected or detected only within ranges confirming the safety of PeptAIde™ are provided in Appendix B.

A degree of hydrolysis (DH) cannot be specified for PeptAIde™. DH in general can be tested e.g. by the o-phthaldialdehyde color reaction on proteins in solubilized form. However, as the majority of the original rice protein as well as roughly 50-60% of the rice protein hydrolysate are insoluble it is not possible to state a degree of hydrolysis. The DH tested on the soluble part of PeptAIde™ indicates a level of approximately 9% which is a sign for a weak to modest DH.

Part 3. Dietary Exposure

Proposed Use and Level

PeptAIde™ is intended for use as a nutrient source at use level ranging from 1.0 to 64.3% PeptAIde™ in select foods and beverages, 20 g per serving in sports nutrition protein bars, and 25 g per serving in protein powders/protein squeezes. The proposed use levels and food categories to which PeptAIde™ is intended be added are listed in Table 7. Table 7 also presents the use levels of Axiom Foods' rice protein product previously determined to be GRAS by Axiom as detailed in GRN 609 and supplemental correspondence with FDA regarding GRN 609 dated June 14, 2018. In GRN 609 Axiom's product is described as a rice protein concentrate containing a minimum of 80% or 90% protein; the additional correspondence indicates that the rice protein is subjected to enzymatic hydrolysis to improve texture and quality and the resulting product contains at least 75% protein. PeptAIde™ and Axiom's rice protein product are therefore both sources of rice protein hydrolysate containing a minimum of 75% protein. In this section, the Axiom's product is referred to as rice protein concentrate.

Many of the intended uses of PeptAIde™ are identical and substitutional to the existing uses of Axiom Foods' rice protein concentrate (GRN 609). The intended uses of PeptAIde™ are substitutional for existing uses of rice protein recognized as GRAS including use in protein powders/squeezes; bread/rolls; health bars (other than protein bars) and grain bars; flavored milk drinks; yogurt; frozen yogurt; fruit smoothies; meat alternatives and imitation meat products vegetable/tomato juice including vegetable smoothies; and prepared soups, dry soup mixes, and condensed soups. Compared to GRN 609, the intended uses of PeptAIde™ also include new uses, namely the intended use in nutritionally enhanced cookies and vegetable and nut-based milk analogues, and use of a higher concentration of rice protein in protein bars, non-milk-based meal replacements, milk-based meal replacements, soy/imitation milks, and nutritionally enhanced ready-to-eat breakfast cereals. Table 7 identifies differences in intended use levels of PeptAIde™ relative to the uses of rice protein concentrate in GRN 609. The use level in "meat alternatives, imitation meat products" is 1-34% in GRN 609 and 1-64% for PeptAIde™. In both assessments, however, rice protein is substitutional for protein in meat alternatives. The meat alternatives reported consumed in this assessment include one food with a higher protein concentration (textured vegetable protein) resulting in a higher range for this category compared to the range in GRN 609.

Table 7. Existing GRAS uses of rice protein concentrate and intended uses of PeptAIde™ in foods

Food category	Food use	Serving Size [a] (g)	Existing Maximum GRAS Use of Rice Protein Concentrate (GRN 609 [b])		Proposed Maximum PeptAIde™ Use		Cumulative Maximum Use	
			%	g/ serving	%	g/ serving	%	g/ serving
Sports nutrition	Protein bars	40	20[c]	8.0 [c]	50	20	50	20
	Protein drink powders (including protein component in fortified smoothies and high protein drinks) and protein squeezes	30	83	25	83	25	83	25
Baked goods and baking mixes	Bread, rolls	50	4.8	2.4	Same as GRN 609		4.8	2.4
	Cookies, high protein nutritionally enhanced products	30	--	--	10	3	10	3
Beverages and beverage bases	Non-milk-based meal replacements	240	1.04	2.5	4.2	10	4.2	10
Breakfast cereals, ready-to-eat (RTE)	RTE, weighing less than 20 g per cup, high protein, nutritionally enhanced cereals	15	16	2.4	40	6.0	40	6.0
	RTE, weighing 20 g or more but less than 43 g per cup; high fiber cereals containing 28 g or more of fiber per 100 g, high protein, nutritionally enhanced cereals	40	8.0	3.2	15	6.0	15	6.0
	RTE, weighing 43 g or more per cup; biscuit types, high protein, nutritionally enhanced cereals	60	4.4	2.6	10	6.0	10	6.0
Dairy product analogues	Soy/imitation milks	240	1.04	2.5	4.2	10	4.2	10
	Vegetable and nut-based milk analogues	240	--	--	4.2	10	4.2	10
Grain products and pastas	Health bars and grain bars containing fruit and vegetables	40	20	8.0	Same as GRN 609		20	8.0
Milk products	Flavored milk drinks	240	1.04	2.5	Same as GRN 609		1.04	2.5
	Milk-based meal replacements	240	1.04	2.5	2.5	6.0	2.5	6.0
	Yogurt	170	1.45	2.5	Same as GRN 609		1.45	2.5
	Frozen yogurt	160	2.00	3.2	Same as GRN 609		2.00	3.2
Plant protein products	Meat alternatives, imitation meat products [d]	NA	1-34.3	NA	1-64.3	NA	1-64.3	NA
Processed fruits and fruit juices	Fruit smoothies	240	20	48	Same as GRN 609		20	48

Food category	Food use	Serving Size [a] (g)	Existing Maximum GRAS Use of Rice Protein Concentrate (GRN 609 [b])		Proposed Maximum PeptAIde™ Use		Cumulative Maximum Use	
			%	g/ serving	%	g/ serving	%	g/ serving
Processed vegetables and vegetable juices	Vegetable/tomato juice including vegetable smoothies	240	20	48	Same as GRN 609		20	48
Soup and soup mixes	Prepared soups, dry soup mixes, and condensed soups[e]	245	0.96	2.4	Same as GRN 609		0.96	2.4
Baked goods and baking mixes	Bagels	110	4.4	4.8	-	-	4.4	4.8
	English muffins	110	4.4	4.8	-	-	4.4	4.8
Breakfast cereals, ready-to-eat (RTE)	RTE, weighing less than 20 g per cup	15	16	2.4	-	-	16	2.4
	RTE, weighing 20 g or more but less than 43 g per cup; high fiber cereals containing 28 g or more of fiber per 100 g	40	8.0	3.2	-	-	8.0	3.2
	RTE, weighing 43 g or more per cup; biscuit types	60	4.4	2.6	-	-	4.4	2.6
Fats and oils	Margarine	15	17.12	2.6	-	-	17.12	2.6
	Salad dressings	30	8	2.4	-	-	8	2.4
Meat products	Meat patty with soy protein	85	4.4	3.7	-	-	4.4	3.7
Processed fruits and fruit juices	Fruit juice	240	1.04	2.5	-	-	1.04	2.5
	Fruit nectars	240	1.04	2.5	-	-	1.04	2.5
	Fruit-flavored drinks	240	1.04	2.5	-	-	1.04	2.5

[a] Serving size correspond to values in Table 2 – Reference Amounts Customarily Consumed per Eating Occasion: General Food Supply as cited in FR Vol 81, No. 103, Friday, May 27, 2016, pp 34000-47. Available at: https://www.govinfo.gov/content/pkg/FR-2016-05-27/pdf/2016-11865.pdf.

[b] As detailed in GRN 609 for rice protein concentrate available at https://www.accessdata.fda.gov/scripts/fdcc/?set=GRASNotices&id=609&sort=GRN_No&order=DESC&startrow=1&type=basic&search=609.

[c] Protein bars was included as part of background uses in health bars and grain bars containing fruit and vegetables.

[d] PeptAIde™ is intended to be substitutional in plant protein products to provide protein at the protein concentration currently in these foods.

[e] Use reflects concentration in soup as consumed; use level in dry mixed and condensed soup was adjusted to provide the same concentration as consumed.

Estimated Daily Intake from Uses in Foods

The estimated daily intake (EDI) of PeptAIde™ from the intended uses was developed from the What We Eat in America (WWEIA) dietary component of the National Health and Nutrition Examination Survey (NHANES) in combination with the United States Department of Agriculture (USDA) Food and Nutrient Database for Dietary Studies (FNDDS).

NHANES Data

The EDI of PeptAIde™ from the proposed uses was derived from food consumption records collected in the WWEIA component of NHANES conducted in 2013-2014 and 2015-2016 (NHANES 2013-2016). The NHANES is a continuous survey that uses a complex multistage probability sample designed to be representative of the civilian U.S. population (NCHS 2016, 2018). NHANES datasets provide nationally representative nutrition and health data and prevalence estimates for nutrition and health status measures in the United States. Statistical weights are provided by the National Center for Health Statistics (NCHS) to adjust for the differential probabilities of selection and non-response.

NHANES 24-hour Dietary Recall

As part of the examination, trained dietary interviewers collected detailed information on all foods and beverages consumed by respondents in the previous 24-hour time period (midnight to midnight). A second dietary recall was administered by telephone three to ten days after the first dietary interview, but not on the same day of the week as the first interview. The dietary component of the survey is conducted as a partnership between the U.S. Department of Agriculture (USDA) and the U.S. Department of Health and Human Services (DHHS). DHHS is responsible for the sample design and data collection, and USDA is responsible for the survey's dietary data collection methodology, maintenance of the databases used to code and process the data, and data review and processing. A total of 14,601 individuals in the survey period 2013-2016 provided 2 complete days of dietary recalls.

Food and Nutrient Database for Dietary Studies (FNDDS)

For each food reported in NHANES, the USDA FNDDS provide information on the amount of energy and approximately 60 nutrients or food constituents per 100 g of each food including protein. Additionally, the FNDDS translates food as reported consumed into one or more ingredients (and corresponding gram amounts) or recipes. Exponent applied FNDDS version 2015-2016 nutrient composition data and food recipes (corresponding to NHANES 2015-2016) (USDA 2018) to process dietary recall data reported in NHANES 2013-2016 and FNDDS version 2013-2014 recipes (corresponding to NHANES 2013-2014) (USDA 2016) for foods that were only reported consumed in NHANES 2013-2014.

Representative NHANES Foods

The list of all food codes reported consumed in NHANES 2013-2016 was reviewed and food codes corresponding to the proposed uses listed in Table 7 were identified. Exponent used the FNDDS database to identify the weight of ingredients in a food which allowed for the estimation of the foods with proposed uses of PeptAIde™ as consumed or consumed as a component in a food mixture. For example, the FNDDS was used to identify the almond milk component (belonging in the food use category of vegetable and nut-based milk analogue) in oatmeal and coffee drinks and only this portion of the food weight was used to determine the intake of PeptAIde™ from that use. The list of all NHANES food codes (and their descriptions) reported consumed during NHANES 2013-2016 and associated with the proposed uses of PeptAIde™ included in the analysis is provided in **Appendix C**.

Analysis

Using the NHANES 2013-2016 consumption data, Exponent estimated the 2-day average daily intake of PeptAIde™ as defined in Table 7 on a "per capita" and "per user" basis. Per capita estimates refer to the consumption based on the entire population of interest whereas per user estimates refer to those who reported consuming any of the foods of interest on either of the survey days. Estimates of intake per person were generated using Exponent's Foods Analysis and Residue Evaluation Program (FARE® version 13.04) software. The analysis was limited to individuals who provided two complete and reliable dietary recalls as determined by NCHS. Exponent uses the statistically weighted values from the survey in its analyses. The statistical weights compensate for variable probabilities of selection, adjust for non-response, and provide intake estimates that are representative of the U.S. population.

As noted above and detailed in Table 7, the intended use of PeptAIde™ is substitutional for some though not all uses of rice protein concentrate previously determined to be GRAS (GRN 609). The intended uses of PeptAIde™ also include use in two additional food categories and higher use levels in select food categories.

The estimates of rice protein intake presented in GRN 609 were based on food consumption data reported in NHANES 2011-2012. Estimates of intake based on dietary recall data from different time periods may differ. As such, the existing EDIs of rice protein from existing GRAS uses as detailed in GRN 609 were updated with the current food consumption data, i.e., NHANES 2013-2016. We note that the use of rice protein in protein powders such as sports nutrition applications was *not* included in the EDIs presented in GRN 609. The estimates presented in GRN 609 reflect the intended uses in all foods other than protein powders. GRN 609 notes that users of protein powders were assumed to consume one serving of product per day, with each serving delivering 25 g rice protein. To most closely approximate the estimates in GRN 609, estimates of rice protein intake were developed without including the use in protein powder. To capture all uses specified in GRN 609, estimates of rice protein intake were then generated based on all uses in food per GRN 609 as well as the intended use in protein powder.

Cumulative intake of rice protein from existing uses (GRN 609) and proposed uses of PeptAIde™ was also estimated. In cases where the proposed uses for PeptAIde™ are the same as those of existing uses in GRN 609 the existing use levels were applied. In cases where the proposed use levels for PeptAIde™ are higher than existing GRAS uses, the higher uses levels

were applied. In cases where there are existing uses in GRN 609, but not a proposed use for PeptAIde™, the existing use levels were applied, see Table 7.

Results

The estimated 2-day average intakes of rice protein from existing uses in GRN 609 (Tables 8 and 9) and from proposed uses of PeptAIde™ (Table 10) were calculated for the total U.S. population, subpopulations of children ages 2-3 years, children 4-18 years, adults 19+ years, and the U.S. population 2 years and older.

Estimated Daily Intake from Existing GRAS Uses

Estimates of rice protein intake from existing GRAS uses are shown in Table 8. The per user mean and 90th percentile intake estimates of rice protein from existing GRAS uses, excluding nutrition protein powders, is 11.2 g/day and 18.8 g/day, respectively, for the total U.S. population (Table 8). These estimated intakes are similar though not identical to estimates derived in GRN 609, namely 10.3 g/day at the mean and 17.3 g/day at the 90th percentile of intake. The small difference in intake may be attributed to use of more recent NHANES data.

The estimated intake of rice protein from all existing GRAS uses, including use in nutrition protein powders, is 12.2 g/day at the per user mean and 21.9 g/day at the per user 90th percentile (Table 9). These estimates of intake represent potential intake of rice protein from all existing uses.

Table 8. Two-day average estimated daily intake of rice protein from existing uses *without* nutrition protein powders; NHANES 2013-2016

			Per Capita		Per User	
			Mean	90th Percentile	Mean	90th Percentile
Population groups	**N[a]**	**% User**	**gram/day**		**gram/day**	
Total U.S. population	14,013	98	11.0	18.5	11.2	18.8
U.S. 2+ y	13,442	99	11.2	18.8	11.3	19.0
Children 2-3 y	588	99	7.8	14.2	7.9	14.2
Children 4-18 y	4,095	100	9.7	16.2	9.8	16.2
Adults 19+ y	8,759	99	11.7	20.4	11.8	20.6

[a] Unweighted number of users; % user, per capita and per user intake estimates derived using statistical weights provided by the National Center for Health Statistics (NCHS).

Table 9. Two-day average estimated daily intake of rice protein from existing uses *with* nutrition protein powders; NHANES 2013-2016

Population groups	N[a]	% User	Per Capita		Per User	
			Mean	90th Percentile	Mean	90th Percentile
			gram/day		gram/day	
Total U.S. population	14,013	98	11.9	21.5	12.2	21.9
U.S. 2+ y	13,442	99	12.1	21.8	12.3	22.2
Children 2-3 y	588	99	7.9	14.1	7.9	14.1
Children 4-18 y	4,095	100	10.0	16.3	10.0	16.3
Adults 19+ y	8,759	99	12.8	24.4	13.0	24.7

[a] Unweighted number of users; % user, per capita and per user intake estimates derived using statistical weights provided by the National Center for Health Statistics (NCHS).

Estimated Daily Intake from Proposed Uses of PeptAIde™

The 2-day average intakes of the proposed uses of PeptAIde™ (see Table 7) are presented in Table 10. Among the total U.S. population, 91% of individuals were identified as consumers of at least one food proposed to contain PeptAIde™, and the per user mean and 90th percentile intakes of PeptAIde™ are estimated at 10.3 g/day and 23.3 g/day, respectively.

Table 10. Two-day average estimated daily intake of PeptAIde™ from the proposed uses; NHANES 2013-2016

Population groups	N[a]	% User	Per Capita		Per User	
			Mean	90th Percentile	Mean	90th Percentile
			gram/day		gram/day	
Total U.S. population	12,953	91	9.4	21.0	10.3	23.3
U.S. 2+ y	12,500	93	9.6	21.4	10.3	23.4
Children 2-3 y	538	93	5.2	11.0	5.6	11.4
Children 4-18 y	3,808	93	6.5	11.7	7.0	12.1
Adults 19+ y	8,154	92	10.5	25.0	11.4	27.0

[a] Unweighted number of users; % user, per capita and per user intake estimates derived using statistical weights provided by the National Center for Health Statistics (NCHS).

Cumulative Estimated Daily Intake

The 2-day average per user cumulative estimated daily intake (CEDI) of rice protein reflects intake from the existing GRAS uses of rice protein concentrate (GRN 609) and intake of the proposed uses of PeptAIde™. For the total U.S. population, the per user mean and 90th percentile CEDIs of rice protein are estimated at 13.0 g/day and 25.0 g/day, respectively.

Table 11. CEDI - Two-day average estimates of background + proposed use of PeptAIde™; NHANES 2013-2016

Population groups	N[a]	% User	Per Capita		Per User	
			Mean	90th Percentile	Mean	90th Percentile
			gram/day		gram/day	
Total U.S. population	14,017	98	12.8	24.6	13.0	25.0
U.S. 2+ y	13,444	99	13.0	24.9	13.1	25.2
Children 2-3 y	588	99	8.6	15.1	8.6	15.6
Children 4-18 y	4,095	100	10.4	17.6	10.4	17.7
Adults 19+ y	8,761	99	13.8	28.9	14.0	29.1

[a] Unweighted number of users; % user, per capita and per user intake estimates derived using statistical weights provided by the National Center for Health Statistics (NCHS).

Among consumers of products containing added rice protein in the total U.S. population, the mean CEDI is 12.2 g/day from existing uses and the CEDI (from existing/background and proposed uses of PeptAIde™ is 13.0 g/day; thus, the incremental increase in rice protein intake at the mean from the proposed uses of PeptAIde™ is 0.8 g/day. Likewise, among consumers of products containing added rice protein in the total U.S. population, the 90th percentile intake of rice protein is 21.9 g/day from existing uses and the CEDI (from existing/background and proposed uses of PeptAIde™ is 25.0 g/day; thus, the incremental increase in rice protein at the 90th percentile from the proposed use of PeptAIde™ is 3.1 g/day.

It is important to note that the EDIs presented in this analysis represent conservatively high estimates of intake. In calculating the EDIs, we have assumed that all foods in each proposed use category will contain the maximum intended use of rice protein. In reality, not all consumers may select products with rice protein for all eating occasions. Additionally, consumption of protein from rice protein can reasonably be assumed to replace other sources of protein in the diet.

Part 4. Self-Limiting Levels of Use

PeptAIde™ is intended for use as a nutrient source at use level ranging from 1.0 to 64.3% PeptAIde™ in a select foods and beverages, 20 g per serving in sports nutrition protein bars, and 25 g per serving in protein powders. The intended uses of PeptAIde™ are substitutional for some existing uses of rice protein recognized as GRAS, new uses in nutritionally enhanced cookies and vegetable and nut-based milk analogues, and use of a higher concentration of in protein bars, non-milk-based meal replacements, milk-based meal replacements, soy/imitation milks, and nutritionally enhanced ready-to-eat breakfast cereals. We are not aware of technological or palatable issues associated with the proposed use levels. Self-limiting levels of use are not applicable to this notice.

Part 5. Experience Based on Common Use in Food before 1958

PeptAIde™ is intended for use as a nutrient source at use level ranging from 1.0 to 64.3% PeptAIde™ in a variety of foods and beverages, 20 g per serving in sports nutrition protein bars, and 25 g per serving in protein powders was based upon scientific procedures. Experience based on common use in food before 1958 is not applicable to this notice.

Part 6. Narrative

History of Safe Use of Rice

The subject of this GRAS notice is PeptAIde™, a rice protein hydrolysate. PeptAIde™ is made from protein derived from non-GMO *Oryza sativa* whole-grain brown rice. Rice is a semi-aquatic annual grass plant that includes approximately 22 species of the genus *Oryza,* of which 20 are wild. There are two species of rice which are important for human consumption - *O. sativa* and *O. glaberrima*. *Oryza sativa* L., the most widely grown rice (currently grown in in Asia, North and South America, the European Union, the Middle East, and Africa), has been cultivated since ancient times and is the staple food of an estimated 3.5 billion people worldwide (FAO, 1993; FAO, 2006).

Rice is harvested from paddy fields, and paddy rice is usually harvested with about 20% moisture and dried down to about 14% prior to storage. The paddy rice is made up of an outer husk layer, germ and bran layers, and the endosperm. Various levels of milling can remove the outermost husk layer to yield brown rice kernels or further remove the bran and germ layers to yield white rice kernels (Muthayya et al., 2014).

The U.S. Food and Drug Administration (FDA) considers rice under a general food category that includes cereals and other grain products 'Grains, e.g., rice, barley, plain' as per 21 CFR §101.12(b)[4]. The serving size (Reference Amount Customarily Consumed (RACC)) of prepared rice is 140 g (45 g dry rice). Apart from being consumed as a stand-alone foodstuff, white and brown rice is also consumed as a main ingredient in many foods commonly consumed by the general population in the U.S., including breakfast cereals, snack foods, baked goods, rice cakes, and pasta, and noodles. Thus, there is common exposure to rice and its protein as part of the food supply.

Rice is available to consume as a whole grain (brown rice) or a refined grain (white rice). Most of the white rice consumed in the U.S. is enriched with thiamin, riboflavin, niacin, and iron to make the nutritional level of the milled product similar to that of brown rice (Batres-Marquez et al., 2009).

Current global milled rice utilization is at 480 million metric tons per annum, with over 85% (408 million metric tons) for human consumption. Of this, China and India account for ~50% of the world's rice consumption (FAO, 2013). Milled rice consumption is observed in the U.S. at 6.88 kg per capita annually (FAO, 2013), although rice intake in the U.S. has increased steadily over the past number of decades (Batres-Marquez et al., 2009).

Based on data from the 1994-1996 Continuing Survey of Food Intakes by Individuals (CSFII), conducted by the USDA, and the 2001-2002 NHANES, conducted by USDA and the U.S. DHHS, Batres-Marquez and colleagues analysed patterns of rice consumption (white and brown rice together) (Batres-Marquez et al., 2009). Based on these data, they reported that up to 18.2% of adults aged 20 years and older reported eating at least a 1⁄4 cup of rice (i.e., >14.1 g dry weight rice) on a given day. Brown rice was consumed by a relatively small share of adults (1.3%

[4] https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?fr=101.12

consumed ≥ 1⁄4 cup of brown rice on a given day). On a per capita basis, rice intake among adults ages 20 years and older was between 11.4 and 11.8 g (dry weight), and among adult consumers of rice mean rice intake was 61.2 g to 66.5 g per day (dry weight).

In an examination of rice consumption in the U.S. using the NHANES 2007-2008 data, the mean amounts of retail commodities based on dietary intake data from NHANES and the Food Intakes Converted to Retail Commodities Database (2007-08) were estimated. From these data, Bowman et al., (2013) reported that the intake of dry (uncooked) rice in male adults ages 20 years and older was 16 g per day and in female adults was 10 g per day. For the total population of males and females (n = 8,529), ages 2 years and older, the intake of dry (uncooked) rice was 12 g per day.

Rice is a major source of energy, and relatively a good source of protein. The usual value assigned to the protein content of milled uncooked rice is 7%, based on a Kjeldahl conversion factor of 5.95. As raw rice contains approximately 7 % protein, the intake of protein from consumption of rice in the U.S. is estimated to be 0.84 g per person per day (for the total population, ages 2 years and older), based on white and brown rice consumption analyzed by Bowman et al., (2013).

Regulatory Status of Rice Protein

The use of rice protein concentrate (Oryzatein™) derived from brown rice in select foods was previously determined to be safe and GRAS by Axiom (GRN 609). When notified of this conclusion, FDA responded with a letter of no concern (FDA, 2016). The subject of the previous GRAS conclusion is a concentrate consisting of 80% protein (90% for the isolate form) with intended uses as an ingredient, formulation aid, and texturizer in baked goods and baking mixes, beverages and beverage bases, breakfast cereals, dairy product analogs, fats and oils, grain products and pastas, milk products, plant protein products, processed fruits and fruit juices, processed vegetables and vegetable juices, and soups and soup mixes at levels ranging from 0.96% to 34.3%. The conclusion of safety was based on scientific principles and review of the safety of rice protein. Information considered in the safety evaluation included the nutrient composition of rice protein concentrate and comparisons with common protein concentrates, namely soy and whey protein concentrate. Data in the published literature regarding the toxicity of rice, safety and tolerance of rice in humans and animals, and information on the digestibility and allergenicity of rice also were reviewed.

Protein ingredients from a wide variety of sources including plant, dairy, animal, fungal, and yeast sources have also been the subject of GRAS notifications to FDA for use in select foods. Many of these protein ingredients are provided as an isolate or concentrate. Plant proteins other than rice protein concentrate or isolate that have been the subject of GRAS conclusions include canola protein (GRNs 683, 386, 327), pea protein (GRNs 788, 608, 581), hemp seed protein (GRN 771), mung bean protein (GRN 684), oat protein (GRN 575), potato protein (GRNs 86, 447), soy protein (GRN 134), and wheat protein (GRN 26). FDA responded to each of these notifications with a letter of no concern regarding the intended uses of these proteins.

Protein Requirements

Protein is an essential macronutrient of the diet, providing a dietary source of nitrogen and essential amino acids required for tissue growth and maintenance. In 2005 the U.S. Institute of Medicine (IOM) set a Recommended Dietary Allowance (RDA) value for protein of 0.8 g/kg of body weight (bw) in adult males and females and 1.05 g/kg bw for boys and girls between 1 and 3 years of age (IOM, 2005). The recommended daily intake of protein is 13 g/day for a child 1 to 3 years of age, 19 g/day for a child 4 to 8 years of age, 34 g/day for a child 9 to 13 years of age, and 46 and 56 g/day for females and males age 14 years and older, respectively. Potential adverse effects of high dietary protein intake related to renal function, osteoporosis, cancer, coronary artery disease, and obesity were evaluated by the IOM (IOM, 2005). The IOM concluded that the available data did not allow for the establishment of a tolerable upper intake level (UL) for daily protein intake or any specific amino acids (IOM, 2005). The European Food Safety Authority's (EFSA) drew the same conclusion that "data are insufficient to establish a UL for protein" (EFSA, 2012) but did note that intake of protein at a level twice the Population Reference Intake (PRI) is safe and that intakes 3-4 times the PRI are not associated with adverse effects.

Protein Requirements and Maximum Protein Intake from Proposed Use

The recommended intakes of protein by life stage group are summarized in Table 12 below along with the estimated intakes of protein from PeptAIde™ resulting from the intended uses. In all population groups, the estimated mean intake of protein from the intended use is below the reference protein intake and well below a level 3-4 times the PRI as identified by EFSA as a level not associated with adverse effects.

Table 12. Recommended Protein Intake Compared to EDI of protein from PeptAIde™ Intended Uses

Age Group (years)	IOM Recommended Protein Intake (g/day)	EFSA PRI	EDI of Protein from PeptAIde™ (g/day)[1]	
			Mean	90th Percentile
2+	-	-	7.7	17.6
2-3	13	12-13 [c]	4.2	8.6
4-18	19, 34, 46-52 [a]	14-15, 48-58 [d]	5.3	9.1
19 +	46-56 [b]	52-62 [e]	8.6	20.3

[1] Assumed 75% protein content in PeptAIde™

EDI, estimated daily intake; EFSA, European Food Safety Authority; IOM, Institute of Medicine; PRI, Population Reference Intake

[a] DRI for children 4-8 years (females and males), 9-13 years (females and males), 14-18 years (females-males); respectively

[b] DRI for adult (females-males)

[c] PRI for children age 2 and 3, respectively (females and males)

[d] PRI for children 4 years (females-males), PRI for adolescents 17 years (females-males); respectively
[e] PRI for adults 18-59 years (females-males)

Maximum Protein Intake from Permitted Uses of GRAS Plant Proteins

As previously noted, plant derived protein concentrates and isolates have been the subject of numerous GRAS conclusions and FDA responded to these notifications with letters of no concern. These protein ingredients are intended for use to provide a range of technical functions and nutritional attributes. It is reasonable to assume that use of protein ingredients such as PeptAIde™ will be substitutional among the various protein ingredients and other sources of protein in the diet. Table 13 below summarizes estimates of protein ingredient intakes from other plant-based isolate or concentrate ingredients concluded to be GRAS with intended uses for a variety of technical and nutritional purposes (e.g., GRNs 327, 447, 608, 609, 683, 684, 788). When estimates of intake were provided, the estimated intakes of these ingredients (typically a minimum of 75 to 90% protein) is in the range of 2 to 21 g per day at the mean and in the range of 5 to 58 g per day at the 90th percentile of intake, with some of the protein ingredients (i.e., pea concentrate/isolate, rice concentrate) potentially providing an additional 25 g of protein per day among consumers of protein powder sports nutrition or meal replacement products containing 15 to 25 g protein per serving (GRNs 788, 608, 609). The estimates of PeptAIde™ intake are therefore comparable to estimates of protein intake previously concluded to be GRAS. Similar to the existing GRAS protein ingredients, use of PeptAIde™ can be assumed to be largely substitutional for other protein ingredients and protein foods in the diet and thus have a minimal net impact on protein intake.

Table 13. Estimated Intakes of Select GRAS Plant-Based Proteins

GRN [a]	Substance	Percent Protein	Estimated Intake of GRN Substance (g/day)		Population
			Mean	90th	
327	Cruciferin-rich canola/rapeseed protein isolate and napin-rich canola/rapeseed protein isolate	≥ 90	20.9	57.9	≥ 20 years
447	Potato protein isolates	≥ 90	2.3, 2.2 [c]	4.8, 4.7 [c]	total population
608	Pea protein concentrate	≥ 80	12.2 [e]	21.9 [e]	total population
684	Mung bean protein isolate	≥ 80	10.1	22.5	≥ 3 years
683	Canola protein isolate	≥ 90	56.4 [b]		Adults
788	Pea protein concentrate	≥ 80	12.2 [e]	21.9 [e]	total population
609	Hydrolyzed rice protein (isolate or concentrate)	≥ 75 [d]	12.2 [e]	21.9 [e]	total population

[a] GRN substances in this table are plant-based protein sources with the intended use as a protein source in foods. GRN for plant-based proteins that are intended for use as a technical role only are not included.
[b] Intake estimates provided on a g protein/kg bw basis (0.94 g/kg bw/day). Calculated protein intake per day based on 60 kg bw.
[c] Values represent estimated intake of low and high molecular weight potato protein isolate.
[d] GRN for rice protein concentrate and isolate.
[e] Estimates of mean and 90th percentile intake reported in GRN 609 as 10.3 and 17.3 g/day, respectively based on NHANES 2011-2012. The estimates presented in GRN 609 do not include intended use in of 15-25 g protein per serving in protein powders. The estimates of intake shown here were updated based on dietary recalls reported in NHANES 2013-16 and include intake of the ingredient in protein powder sports nutrition applications.

Protein Quality Compared with other Protein Concentrates

Amino Acid Profiles

The amino acid composition for PeptAIde™ is similar to the amino acid profiles for brown rice protein isolates and concentrates in the published literature (Table 14). Kalman (2014) analyzed the amino acid composition for both a protein concentrate (Oryzatein-80™) and a protein isolate (Oryzatein-90™) from organic whole-grain brown rice. Oryzatein-80™ concentrate is a close representation of the raw material used in the present production of PeptAIde™ (see Appendix A – acceptance criteria of raw material). Oryzatein-80™ concentrate is also a rice protein concentrate previously determined to be GRAS for use in select foods (GRN 609).

Table 14. Amino Acid Profile for PeptAIde™ Compared to Published Data for Brown Rice Protein Isolate (Oryzatein-90™) and Brown Rice Concentrate (Oryzatein-80™) and Cooked Brown Rice

	% of Total Amino Acids [a]			
Amino acid	**PeptAIde™ (data from 3 batches)**	**Oryzatein 90 - protein isolate [1]**	**Oryzatein 80 – protein concentrate**	***Oryza sativa* - cooked brown rice**
Alanine	6.1 - 6.2	5.8 – 5.7	5.6	5.8
Arginine	7.8 - 8.5	8.2 – 8.3	7.9	7.6
Aspartic acid	9.2 - 9.6	8.9 - 9	8.7	9.4
Cystine	2.3 - 2.3	2.2 – 2.4	2.1	1.2
Glutamic acid	18.2 - 19.3	17.9 - 18	17.4	20.4
Glycine	4.75 - 5.4	4.5 - 4.6	4.4	4.9
Histidine	2.3 - 2.5	2.2 - 2.4	2.2	2.6
Isoleucine	4.3 - 4.4	4.2 - 4.5	4.4	4.2
Leucine	8.5 - 8.9	8.3	8.0	8.3
Lysine	3.4 - 3.4	2.9 - 3.1	2.7	3.8
Methionine	2.4 - 2.4	2.9 – 3.0	2.9	2.2
Phenylalanine	5.4 - 5.9	5.6 - 5.7	5.3	5.1
Proline	4.9 - 5.1	3.7 – 4.8	4.6	4.7
Serine	5.4 - 5.7	5.1	4.9	5.2
Threonine	3.9 - 3.9	3.7 - 3.8	3.6	3.7
Tryptophan	-*	1.5	1.4	1.3
Tyrosine	5 - 5.8	5.5 – 5.6	8.0	3.8
Valine	6.1 - 6.6	5.6 - 5.9	5.8	5.8
g amino acids/100 g	74.1 – 79.2	77.4 – 76.5	77.5	2.6
% Total amino acids	100*	100	100	100

[a] The amino acid profiles for two samples from different batches of Oryzatein-90™ and cooked brown rice as presented in Kalman et al., 2014.

* Tryptophan value not reported by laboratory; the method used in this analysis (ISO 13903:2005) is described as not valid for the determination of tryptophan due to the decomposition by acids used in the method. Value for tryptophan are assumed to be zero in calculation of % of total amino acids.

The amino acid composition for PeptAIde™ is also demonstrated to be similar to the amino acid profiles for protein concentrates from other sources, e.g. soy and pea (Table 15).

Table 15. Amino Acid (AA) Profile for PeptAIde™ Compared to Published Data for Soy Protein Concentrate and Pea Protein Concentrate

	% of Total Amino Acids		
	PeptAIde™ (data from 3 batches)	**Soy Protein Concentrate [a]**	**Pea Protein Concentrate [b]**
Alanine	6.1 - 6.2	4.3	4.3
Arginine	7.8 - 8.5	7.4	8.2
Aspartic acid	9.2 - 9.6	11.5	11.8
Cystine	2.3 - 2.3	1.4	1.3[b]
Glutamic acid	18.2 - 19.3	19.1	16.1
Glycine	4.75 - 5.4	4.3	4.0
Histidine	2.3 - 2.5	2.5	2.6
Isoleucine	4.3 - 4.4	4.7	4.9
Leucine	8.5 - 8.9	7.8	8.6
Lysine	3.36 - 3.4	6.2	7.7
Methionine	2.4 - 2.4	1.3	1.0
Phenylalanine	5.4 - 5.9	5.2	5.3
Proline	4.9 - 5.1	5.2	5.2
Serine	5.4 - 5.7	5.4	4.8
Threonine	3.9 - 3.9	3.9	4.3
Tryptophan	-*	1.3	0.9
Tyrosine	5 - 5.8	3.7	4.1
Valine	6.1 - 6.57	4.9	5.0
g amino acids/100 g	74.1 – 79.2	63.0	76.7
% Total AA	100*	100	100

[a] The amino acid profiles for soy protein as presented in Kalman et al., 2014.
[b] The amino acid profiles for pea protein in GRN 788 adjusted based on total AA (g AA/total AA * 100); reported as cysteine.
* Tryptophan value not reported by laboratory; the method used in this analysis (ISO 13903:2005) is described as not valid for the determination of tryptophan due to the decomposition by acids used in the method. Value for tryptophan are assumed to be zero in calculation of % of total amino acids.

As can be seen from the amino acid composition data presented in Table 15, the amino acid profiles of plant-based protein concentrates are generally comparable. Compared to PeptAIde™, soy and pea protein concentrates have slightly higher concentrations of aspartic acid and lysine, and slightly lower concentrations of alanine, cystine, methionine, tyrosine and valine.

Protein Digestibility

Plant proteins tend to have lower digestibility scores compared to animal derived proteins such as from milk or egg. Utilizable protein was comparable in brown rice, wheat, maize, rye, oats and potato but was lower in sorghum and higher in millet (FAO, 1993). Protein digestibility values vary. The true digestibility of cooked rice protein in humans was reported to be 88 ± 4 % with an amino acid score of approximately 65% (based on 5.8% lysine per 16 g N as 100%) (WHO, 1985). More recently, the digestibility of various protein sources was studied (Rutherford et al., 2014). In this study it was demonstrated that the ileal digestibility of rice protein concentrate is higher compared to cooked rice. Rice protein concentrate produced an 82% ileal digestibility

compared to 77% ileal digestibility for cooked rice. Milk protein concentrates have been found to be between 96-100% expressed as mean amino acid digestibility.

As protein hydrolysates are already partly broken down in their protein structures, they in general should show higher digestibility compared to intact proteins. This was confirmed by Koopman et al. (2009) who evaluated the protein digestion and absorption of casein against casein hydrolysates and found a 27% higher phenylalanine appearance in the hydrolysate. These findings from animal-based protein had lately also been verified in plant-based protein sources. Aryee et al. (2016) utilized lentil protein and demonstrated a higher *in vitro* digestibility of pre-hydrolyzed plant proteins versus their native counterparts.

Other Nutrients

In addition to protein, PeptAIde™ provides minor amounts of dietary fats and fibers, and minerals (see Table 1).

Allergenicity

Some cereal grains have been reported to be a cause of food allergies; however, in the USA and Europe, rice is typically not considered an issue for allergenicity. Rice is among the first solid foods fed to infants in many cultures and is often a major component of elimination diets used in the evaluation and diagnosis of food allergies (Mofidi, 2003). The present rice protein hydrolysate (PeptAIde™) does not contain any of the eight foods considered to be major food allergens under the U.S. Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA) (milk, egg, fish, Crustacean shellfish, tree nuts, peanuts, soybeans and wheat)[5].

In a previous GRAS notification for a rice protein concentrate (Oryzatein™) derived from brown rice, which was Generally Recognized As Safe with no concerns from the FDA (GRN 609, submitted November 2015), it was noted that there are some reported instances of rice-allergy/sensitivity in the literature, but overall allergy to rice has been rare and consumption of rice protein concentrate is unlikely to result in allergic reaction.

An updated search in PubMed was conducted in January 2019 and in April 2020 to identify new publications on allergenicity and rice since the preparation of GRN 609 (see Appendix D for search summary). A number of more recent studies have examined food protein-induced enterocolitis syndrome (FPIES), which is a non-IgE-mediated food hypersensitivity featured by gastrointestinal symptoms, including profuse vomiting, and lethargy, often followed by diarrhea, and a systemic inflammatory response (Nowak-Wegrzyn et al., 2015). Reactions are consistent with antigen specificity, and although most individuals react to a single food, multi-food reactivity also occurs (Goswami et al., 2017). In their systematic review of literature relevant to FPIES, Manti and colleagues describe that the most common causative foods of FPIES are cow's milk, soy, and rice. However, many other foods can also trigger FPIES (Manti et al., 2017) and the most common food triggers vary by age and phenotype of FPIES (acute or chronic) (Nowak-

[5] These eight major foods or food groups account for 90 % of food allergies (https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Allergens/ucm106187.htm)

Wegrzyn et al., 2019). As reported by Nowak-Wegrzyn et al. (2019), rice and oat are the most common food triggers of acute FPIES among infants and children. In a population-based study of FPIES in Australian infants up to 24 months, Mehr et al. (2017) reported an estimated incidence for FPIES of 15.4/100,000/y, and that rice was the most common food trigger - rice (45%), cow's milk (33%), and egg (12%). This is in contrast to data from other countries, such as the U.S., the United Kingdom (U.K.), Italy and Spain, where FPIES to cow's milk predominates. In these cohorts, rice accounts for 4% to 23% of all triggers (Mehr et al., 2017). The reported U.S. rate of FPIES to rice (19% of all FPIES) is approximately half the Australian rate (Ruffner et al., 2013). Rice was the food trigger among 9.7% of Greek children (n=72) with acute FPIES, while cow's milk (45.8%) and fish (34.7%) were the most common triggers (Xepapadaki et al., 2019). It has been documented that there is a high and rapid rate of recovery for FPIES. In particular, Mehr and colleagues reported resolution of 83% of soy FPIES and 80% of rice FPIES by 3 years of age in Australian children (Mehr et al., 2009), while in other reports 87% of rice FPIES cases are resolved by 3 years of age among Australian children (Lee et al., 2017). In a previous study in 10 children with rice FPIES in the U.S., it was observed that 40% of cases had resolved by 3 years of age (Nowak-Wegrzyn et al., 2003). Additionally, in a cohort of 36 people with rice FPIES (n=160 in total population), the median age of resolution of rice FPIES was 4.7 years (Caubet et al., 2014). The overall publicly available data indicate that the reported allergy to rice is rare, and that the incidence of FPIES to rice in the U.S. is relatively uncommon and is likely to resolve.

Additionally, BASF commissioned an evaluation of the potential risk of allergenicity for PeptAIde™ by Dr. Richard E. Goodman, an food allergy expert. The purpose of the commissioned study was to perform a digestion assay in pepsin and to conduct an overall literature search for food allergy risks of rice. However, based on the preliminary SDS-PAGE results, Dr. Goodman concluded that standard pepsin digestion assay could not be conducted as there are no individual bands that are visible in the solubilized material, and there is no practical mean to read the results. Based on a comprehensive review of the literature on risk of rice allergy, Dr. Goodman concluded that the evidence of the prevalence of food allergy to rice is sparse and reactions are usually quite mild and does not fit the criteria for containment as an allergenic source under FALCPA in the USA, or similar laws in the EU or Australia. All foods made with PeptAIde™, however, should be labeled as "rice" in the ingredient list to protect rice allergic consumers. Dr. Goodman's report is enclosed in Appendix E.

Evidence Regarding Dietary Protein Intake in Children since the IOM's Review

Due to the higher intake of protein relative to dietary protein requirements from proposed uses of PeptAIde™ among children, a review of the recent evidence of health effects associated with protein intake among children greater than one year of age was conducted. The search targeted recent systematic reviews and meta-analyses on protein intake among children beyond the stage of infancy, i.e., one year of age and older (see Appendix D). Three systematic reviews were identified; they investigated the effects of high protein intake among children on blood pressure, insulin sensitivity, and lipids (Voortman et al., 2014) and risk of overweight or obesity (Patro-Golab et al., 2017; Gow et al., 2014)

In a systematic review of observational and interventional trials investigating the effect of protein intake on blood pressure, insulin sensitivity, and lipids among children up to 18 years of age, the authors concluded there was no observed association between protein intake and any of the outcomes of interest, but the quality of included studies was low (Voortman et al., 2014).

A review of systematic reviews was conducted to determine the effect of nutritional interventions or exposures during early life (up to 3 years of age) on risk of overweight, obesity, and adiposity as part of the Early Nutrition research project (Patro-Golab et al., 2017). This review identified two systematic reviews that evaluate the association between protein intake in early childhood and body weight and/or adiposity (Pearce and Langley-Evans, 2013; Hornell et al. 2013), one of which only investigated dietary patterns of complementary foods up to 12 months of age (Pearce and Langley-Evans, 2013). Hornell et al. (2013) evaluated the effect of amount and source of dietary protein on health outcomes among children from 0 to 18 years of age. Only 2 of the 23 studies included in this review of the association between protein intake during early life and risk of overweight or obesity evaluated protein intake among children between 1 to 5 years of age. The authors conclude that protein intake during infancy and early childhood is associated with increased BMI, while there is "limited-inconclusive" evidence of an association later in childhood. Based on the available information, the authors conclude that the period of exposure most sensitive to these effects of higher protein intake "seems probable" within the first two years of life and note that the effects are stronger with animal protein than vegetable protein. In addition, a meta-analysis of randomized controlled trials investigated the effects of macronutrient distributions on BMI among overweight and obese children and adolescents (6-18 years of age) (Gow et al., 2014). Five studies compared high protein and standard protein diets on BMI z-score. There was no observed difference in BMI z-score in the meta-analysis of these interventions.

Overall, the evidence indicates that high protein diets in infancy and very early childhood (< 2 years of life) are associated with increased BMI, though the effects of higher protein intake later in childhood on body weight status are less conclusive.

Safety Information Summarized in GRN 609 (Rice Protein Concentrate)

In the previous GRAS notification for a rice protein concentrate (Oryzatein™) derived from brown rice, which was Generally Recognized As Safe with no concerns from the FDA (GRN 609), several aspects of safety-related evidence for rice protein were discussed. The petitioner (Axiom) concluded from the nutritional and compositional comparisons between their rice protein products and other protein extract formulations, including soy and pea, that rice protein has similar profiles to other commercially available protein extracts generally considered safe.

The studies described in their notification included *in vivo* studies in rats and mice demonstrating (i) no acute oral toxicity or mutagenicity studies, (ii) clinical studies in infants including a growth study of infants given a hydrolyzed rice protein based infant formula and (iii) studies of resistance trained athletes consuming rice protein isolate. In addition, two studies which examined the ileal digestibility of rice protein concentrate in weaned piglets were described. Overall, the findings from these studies support the safe use of rice protein for human consumption at the intended level of use.

As described in GRN 609, the safety of hydrolyzed rice bran protein and hydrolyzed rice protein were evaluated by the Cosmetic Ingredient Review Panel (CIR, 2006). Although the CIR Panel review is focused on cosmetic applications of rice protein, some of the safety related observations are also applicable to the subject of present GRAS assessment. Such as, in the acute oral toxicity test of hydrolyzed rice protein, male and female Sprague Dawley rats (five each) were gavaged with 2 g/kg body weight of the liquid material and followed for 14 days. No mortality or other clinical signs, including apathy or weight loss, were reported. These studies are briefly reviewed below.

Zhai et al. (1996) investigated the safety of Chinese wild brown rice (*Zizania latifolia*) in acute 14-day toxicity and mutagenicity studies in mice. *Zizania latifolia* grain contains higher amounts of protein, ash and crude fibre than white rice. In the acute toxicity study, the mice experienced no adverse effects in response to a diet containing up to 21.5 g/kg of Chinese wild brown rice. In the mutagenicity studies in mice, as evaluated by the bone marrow micronucleus and sperm abnormality tests, Chinese wild brown rice (10 g/kg bw) was found to be negative. In an Ames assay using *Salmonella typhimurium*, Chinese wild brown rice was also not considered mutagenic. Khan et al. (2011) investigated the safety of rice bran protein isolates in Sprague Dawley rats. The rats were fed a diet containing microwave rice bran protein isolates, dry heat protein isolates, parboiled protein isolates, unstabilized protein isolates, casein (reference diet) and soy protein (reference diet) for two weeks. There were no test-diet related adverse effects observed in the rats. The investigators concluded that rice protein concentrate is safe for food use.

Lasekan et al. (2006) evaluated growth, tolerance and plasma biochemistries in infants fed an experimental rice protein-based infant formula in a randomized, blinded, 16-week parallel feeding trial. In this trial, 65 healthy infants were fed either an experimental partially hydrolyzed rice protein-based infant formula fortified with lysine and threonine (n=32), or a standard intact cow's milk protein-based formula (n=33) as a control. The results of this study suggest that the partially hydrolyzed rice protein-based formula was adequate in supporting normal growth and biochemistries in healthy term infants during the first 4 months after birth.

Joy et al. (2013) investigated the effects of post-exercise consumption of rice protein isolate compared to equally dosed whey protein isolate in 25 resistance-trained male adults. The protein supplement consisted of either 48 g of whey protein isolate (Dutch Chocolate) or 48 g of rice protein isolate (Oryzatein, Axiom Foods) dissolved in 500 ml of water, and was consumed on training days following exercise (i.e. 3 days per week for 8 weeks). Overall, no adverse effects from either supplementation were reported.

In terms of digestibility, Gottlob et al. (2006) and Sauer et al. (2012) investigated the effects of rice protein concentrate in growing pigs. Gottlob et al. (2006) determined the apparent ileal digestibility and standardized ileal digestibility of amino acids, digestible energy, metabolizable energy, and net energy for rice protein concentrate. The investigators noted that although rice protein concentrate contains a high crude protein concentration, it is relatively low in lysine and threonine concentrations. The rice protein concentrate used in the formulated diet for feeding to pigs was 18.55%. Apparent ileal digestible lysine, methionine, and threonine values for rice protein concentrate were 80.0, 65.6, and 68.4%, respectively, and standardized ileal digestibility for lysine, methionine, and threonine values were 86.6, 69.0, and 78.9%, respectively. Sauer et al. (2012) assessed standardized ileal digestibility of amino acid in protein sources including rice protein concentrate. The rice protein concentrate was added at levels of 18.5% in the synthetic

diet. The investigators concluded that the use of rice protein concentrate, despite its high crude protein content, in diets for weaned piglets is limited due to its low standardized ileal digestibility of amino acid.

Safety Information Identified Since GRN 609

In order to establish whether additional evidence regarding the safety of rice protein or hydrolyzed rice protein exists since the preparation of GRN 609, an updated search for published literature in PubMed was conducted for the period 01 January 2015 to 15 January 2019 and updated in April 2020 (Appendix D). No safety studies of relevance were identified.

Summary

Rice is a food with a long history of use. Rice protein, a component of rice, has a history of use through consumption of rice. Rice protein concentrate also is recognized as a GRAS ingredient for use in select foods. The safety of rice protein concentrate was established based on the similar composition of rice protein concentrate with protein concentrates of soy and pea which have been widely consumed with no known safety concerns. As reviewed in GRN 609, pre-clinical and clinical data support the safe intake of rice protein. No new information was identified to call into question the previous conclusion of safety.

PeptAIde™, the subject of this review, is compositionally similar to commonly consumed protein concentrates such as soy and pea protein concentrates as well as the GRAS rice protein concentrate from GRN 609. The CEDIs of rice protein including the intended uses of PeptAIde™ intake are comparable to estimates of protein intake previously concluded to be GRAS. Similar to the existing GRAS protein ingredients, use of PeptAIde™ can be assumed to be largely substitutional for other protein ingredients and protein foods in the diet and thus have a minimal net impact on protein intake. A UL for protein intake has not been established by the IOM. It is reasonable to conclude that the intended use of PeptAIde™ is safe and generally recognized as safe based on scientific procedures.

Safety Conclusion

PeptAIde™ is intended for use as a nutrient source at use level ranging from 1.0 to 64.3% PeptAIde™ in select foods and beverages, 20 g per serving in sports nutrition protein bars, and 25 g per serving in protein powders. The intended uses of PeptAIde™ are substitutional for some existing uses of rice protein recognized as GRAS, include new uses in nutritionally enhanced cookies and vegetable and nut-based milk analogues, and use of a higher concentration of in protein bars, non-milk-based meal replacements, milk-based meal replacements, soy/imitation milks, and nutritionally enhanced ready-to-eat breakfast cereals. A comparison of compositional data on rice protein hydrolysate and common protein concentrates including soy protein concentrate, pea protein concentrate, and rice protein concentrate which was previously concluded to be GRAS indicates that the protein sources are comparable based on protein content and amino acid profile. Use of PeptAIde™ will be substitutional for some current protein intakes. A UL has not been established for protein. The overall estimate daily intake of protein

was concluded to be consistent with intakes previously determined to be GRAS. Use of PeptAIde™ therefore can be concluded to be safe, and it can be concluded that the proposed use of PeptAIde™ in select foods and beverages produced using current cGMP is Generally Recognized as Safe based on scientific procedures within the meaning of the FD&C Act, i.e., meets the standard of reasonable certainty of no harm.

Discussion of Information Inconsistent with GRAS Determination

No information has been identified that would be inconsistent with a finding that the proposed use of PeptAIde™ in select foods, meeting appropriate specifications specified herein and used according to cGMP, is safe and GRAS based on scientific procedures, under the conditions of intended use in foods.

Basis for Conclusion that there is Consensus Regarding Safety

General recognition of safety through scientific procedures requires common knowledge throughout the scientific community knowledgeable about the safety of food ingredients that there is a reasonable certainty that a substance is not harmful under the intended conditions of use in foods. The aforementioned regulatory and scientific reviews related to the consumption and safety of PeptAIde™ are published in the scientific literature and, therefore, are generally available and generally known among the community of qualified food ingredient safety experts. There is broad-based and widely disseminated knowledge concerning rice protein. The data and publicly available information supporting the safety of the proposed use of PeptAIde™ as a nutrient source at use level ranging from 1.0 to 64.3% PeptAIde™ in select foods and beverages, 20 g per serving in sports nutrition protein bars, and 25 g per serving in protein powders proposed in this notification are not only widely known and disseminated, but are also commonly accepted among qualified food safety experts.

A GRAS Panel consisted of the following individuals Dr. Robert J. Nicolosi, (Professor Emeritus, Clinical Laboratory and Nutritional Sciences, University of Massachusetts Lowell), and Dr. Nadine R. Sahyoun, (Professor, Nutrition and Food Science, University of Maryland)., critically evaluated Exponent's safety documentation (the dossier) and other available data and information that the members of the GRAS Panel believed to be pertinent to the safety of the proposed use of PeptAIde™ is intended for use as a nutrient source in a variety of foods and beverages. The GRAS Panel convened on April 4, 2019, and April 24, 2019 via teleconference and independently, jointly, and unanimously concluded that PeptAIde™, produced consistent with current good manufacturing practice (cGMP) and meeting the stated specifications, is safe for use as an ingredient in select foods and beverages. The GRAS Panel further concluded unanimously that the intended use of PeptAIde™ in select foods and beverages is GRAS based on scientific procedures. It is also the unanimous consensus opinion of this GRAS Panel that other qualified experts would concur with these conclusions. The GRAS Panel Signed Consensus Statement is located in Appendix F**.**

The intended use of use of PeptAIde™ in select foods and beverages has been determined to be safe through scientific procedures as set forth in 21 CFR§170.30(b), thus satisfying the so-called "technical" element of the GRAS determination. Because this safety evaluation was based on

generally available and widely accepted data and information, it also satisfies the so-called "common knowledge" element of a GRAS determination.

Part 7. List of Supporting Data and Information in GRAS Notice

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Appendices

Appendix A. Input Materials Acceptance Criteria

BASF SE, 67056 Ludwigshafen, Deutschland

U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
Office of Food Additive Safety

5/18/2020
NUTRITION & HEALTH
Human Nutrition
G-ENH/MR

GRAS Conclusion for the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages

Appendix A:
Input Material: Rice Protein Acceptance Criteria

Description:

Protein concentrate prepared from natural brown rice (Oryza sativa), GMO Free

Physical, Chemical and Microbiological Specifications:

	Min.	Max.	Units	Remarks
Appearance	Beige to yellow light brown powder			
Sensory	Mild, typical non-offensive smell			
Protein Content	80		%	N*6.25 on dry basis
Fat Content		8	%	
Ash content		5	%	
Lead		0.4	mg/kg	
Cadmium		0.6	mg/kg	
Mercury		0.1	mg/kg	
Arsenic		0.2	mg/kg	
Iron		300	mg/kg	
Total Aerobic Plate Count		10,000	cfu/g	
Aerobic mesophilic spore formers		5,000	cfu/g	DIN EN ISO 4833-1, mod (10 min 80°C)
Bacillus cereus		500	cfu/g	
Thermophilic bacteria (55°C) *		5,000	cfu/g	DIN EN ISO 4833-1 mod
Thermophilic spores (55°C) *		5,000	cfu/g	DIN EN ISO 4833-1 mod (10 min 80°C)
Yeast and moulds		500	cfu/g	
Salmonella	Absent in 25g			
Coliforms		10	cfu/g	
E. coli	Absent in 1g			

* Reference lab for thermophilic bacteria and spores: SGS Germany GmbH

GRAS Conclusion for the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages

Appendix A:
Input Material: Rice Protein Acceptance Criteria

Further quality requirements:

Product of non-gm origin according to EU regulations,
Packaging food grade according to EU regulations,
Halal and kosher certified,
Food grade material produced under HACCP and certified process by FSSC22000, BRC or analogue

Stability:

Minimum 24 months after date of manufacturing for originally packed (unopened) product.

We create chemistry

Nutrition & Health

BASF SE, 67056 Ludwigshafen, Germany

To whom it may concern

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G-ENH/MR
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sebastian.aurich@basf.com

Enzyme Information Statement

PeptAIde Date: 7 Dec. 2018

PRD 30696511

The above-mentioned product is brown rice protein hydrolyzate.

The hydrolyzation is done using a proteolytic enzyme obtained from *Bacillus amyloliquefaciens*.

The referring E.C. numbering is: EC 3.4.21.62 (Formerly EC 3.4.4.16 and EC 3.4.21.14)

BASF SE
Human Nutrition
Manager Global Regulatory & External Affairs

i.A. Dr. Sebastian Aurich

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Registration Court:
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Registration No.: HRB 6000

Chairman of the Supervisory Board:
Juergen Hambrecht

Board of Executive Directors:
Martin Brudermueller, Chairman;
Hans-Ulrich Engel, Vice Chairman;
Saori Dubourg, Sanjeev Gandhi,
Michael Heinz, Markus Kamieth, Wayne T. Smith

Appendix B. Allocation of Analytical Laboratory Reports

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BASF SE, 67056 Ludwigshafen, Deutschland

U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
Office of Food Additive Safety

5/18/2020
NUTRITION & HEALTH
Human Nutrition
G-ENH/MR

GRAS Conclusion for the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages

Preface to Appendix B:
Allocation of PeptAide™ Laboratory Results for Batch 1 to Batch 4.

Parameter	Information / Laboratory Reference	Content
Batch 1		
Lot number	DH 5958	
Analytical (sample) ref. no	98280 / 99353	
Production date	Jul. 10, 2018	
Laboratory reports:		
Labor LS	LS report No. 180911-0026-001	Microbiological report
SGS	Test Report 3944203	PAH
Eurofins	Analytical Report AR-18-JC-157133-02	Nutritional analysis, Heavy metals, PCB, Dioxins, Pesticides, Mycotoxins, Nitrates/Nitrites
Eurofins	Prüfbericht AR-19-JC-000191-01	Amino Acids
Batch 2		
Lot number	0019555471 / 0019552865	
Analytical (sample) ref. no	98514 / 98523	
Production date	Aug. 24, 2018	
Laboratory reports:		
Labor LS	LS report No. 180913-0029-001	Microbiological report
SGS	Prüfbericht 3973816	PAH
Eurofins	Prüfbericht AR-18-JC-159423-01	Amino acids, Heavy metals, Mycotoxins
Eurofins	Prüfbericht AR-18-JC-163727-01	PCB, Dioxins, Pesticides

GRAS Conclusion for the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages

Preface to Appendix B:
Allocation of PeptAide™ Laboratory Results for Batch 1 to Batch 4.

Eurofins	Analytical Report AR-18-JC-165565-01	Nitrates/Nitrates
Dr. Wirts	Prüfbericht PB1810183L	Nutritional analysis
Batch 3		
Lot number	DH 5969	
Analytical (sample) ref. no	98524	
Production date	Aug. 27, 2018	
Laboratory reports:		
Labor LS	L+S No. 180913-0027-001	Microbiological report
SGS	Test Report 3983988	PAH
Eurofins	Analytical Report AR-18-JC-171714-01	Heavy metals, PCB, Dioxins, Pesticides, Mycotoxins, Nitrates/Nitrites
Dr. Wirts	Prüfbericht PB1810741L	Nutritional analysis
Batch 4		
Lot number	0020667018	
Analytical (sample) ref. no	0020667018	
Production date	April 4, 2019	
Laboratory reports:		
BASF	Analysis Report 26.09.2019	Microbiological report
Eurofins	Analytical Report AR-19-JC-075814-01	Amino Acids, Heavy metals, PCB, Dioxins, Pesticides, Mycotoxins,
Dr. Wirts	PB1904553 L (updated Version, Date: May 15, 2020)	Nutritional analysis

BATCH #1 DATA

Labor LS SE & Co. KG Mangelsfeld 4, 5, 6 | 97708 Bad Bocklet | Germany

BASF Personal Care and Nutrition GmbH
Ms Margit Kapitzke
Robert-Hansen-Straße 1
89257 Illertissen

Fon: +49 (0)97 08/91 00-0
labor@labor-ls.de
www.labor-ls.de

Bad Bocklet 17 Sep 2018 / JGE / Basfll

Certificate of Analysis

L+S No:	180911-0026-001	**L+S Code:**	1190907 / L
Product name:	Rice protein hydrolysate		
Description:	BI: 98280		
Entry temperature:	room temperature		
Your Order No:	4944273100		
Order dated:	10 Sep 2018	**Sample receipt:**	11 Sep 2018
Start of test:	11 Sep 2018	**End of test:**	17 Sep 2018

according to paragraph 64 LFGB*

Parameter	Method	Specification / Demands	Result
Sporen aerober Sporenbildner, quantitativ	L+S SOP 9.036		< 10 CFU / g
Bacillus cereus präsumtiv, quantitativ	*L 00.00 - 33, mod.		100 CFU / g DIN EN ISO 7932. mod.
Escherichia coli, qualitative	L+S SOP 9.009		not detected / g
Enterobacteriaceae, quantitative	*L 00.00-133/2, mod.		< 10 CFU / g DIN EN ISO 21528-2
total viable count, aerobic mesophilic 30°C	*L 00.00 - 88/2 mod.		1500 CFU / g DIN EN ISO 4833-2. mod.
yeasts, quantitative	*L 01.00 - 37, mod.		< 10 CFU / g ISO 21527. mod.
Salmonella sp., qualitative	*L 00.00 - 20		not detected / 25 g DIN EN ISO 6579-1
molds, quantitative	*L 01.00 - 37, mod.		30 CFU / g ISO 21527. mod.

This document was created by a GMP-supervised LIMS and approved by electronic signature.

Approved on 17 Sep 2018 at 14:02 by Franziska Hofmann, Team Manager.

Labor LS SE & Co. KG
Mangelsfeld 4, 5, 6
97708 Bad Bocklet
AG Schweinfurt - HRA 9940

USt.-Id.: DE 317 022 554
EORI-Nr.: DE 924 152 552 472 760

Ärztlicher Leiter:
PD Dr. med. Andreas Schwarzkopf

Hypo Vereinsbank Schweinfurt
Deutsche Bank Würzburg

Pers. haftende Gesellschafterin:
Labor LS SE Verwaltungsgesellschaft
Mangelsfeld 4, 5, 6
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AG Schweinfurt - HRB 7765

IBAN: DE10 7932 0075 0002 0110 00
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Verwaltungsrat (Vors.):
Dipl. Kfm. Werner Wohnhas
Geschäftsführende Direktoren:
Dr. Frank Böttcher,
Dr. Peter Löprick, Dr. Jürgen Balles

BIC: HYVEDEMM451
BIC: DEUTDEMM790

SGS Germany GmbH Rödingsmarkt 16 20459 Hamburg

BASF Personal Care and Nutrition GmbH
Robert-Hansen-Straße 1
89257 Illertissen

Test Report 3944203
Order No. 4652834
Customer No. 10078225

Mandy Elias
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mandy.elias@sgs.com

Agriculture, Food

SGS Germany GmbH
Rödingsmarkt 16
20459 Hamburg

DAkkS Deutsche Akkreditierungsstelle D-PL-11020-04-01

Hamburg, 20.08.2018

Your order/project: .
Your purchase order number: 4942469521
Your purchase order date: 13.08.2018

General Information:

Sample No.:	180795931
Sample:	RICE PROTEIN HYDROLYSATE Proben-Nr.: 98280
Date of receipt:	14.08.2018
Testing period (begin / end):	14.08.2018 / 20.08.2018
Quantity:	93g
Packaging:	Plastic bottle

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
PAH						
Benzo(a)anthracene	SOP M 2920, GC/MS	HH	µg/kg	1,8	0,2	
Chrysene	SOP M 2920, GC/MS	HH	µg/kg	2,4	0,2	
Benzo(b)fluoranthene	SOP M 2920, GC/MS	HH	µg/kg	1,6	0,2	
Benzo(a)pyrene	SOP M 2920, GC/MS	HH	µg/kg	0,6	0,2	
Sum PAH 4 (Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene)	calculated	HH	µg/kg	6,4		

The laboratory sites of the SGS group Germany according to the abbreviations mentioned above are listed at http://www.institut-fresenius.de/filestore/89/laborstandortkuerzelsgs2.pdf.

SGS Germany GmbH

Summary of used test methods:

SOP M 2920, GC/MS	

calculated	

*** End of test report ***

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Eurofins WEJ Contaminants · Neuländer Kamp 1 · D-21079 Hamburg

BASF Personal Care and Nutrition GmbH
-Standort Illertissen-
Postfach 10 63
89251 Illertissen

Person in charge	Ms D. Zarthe	- 2907
Client support	Ms D. Zarthe	- 2907

Report date 07.09.2018

Analytical report: AR-18-JC-157133-02

This report replaces report number: AR-18-JC-157133-01

Sample Code 706-2018-00146675

Reference	rice protein hydrolysate
Client contract reference	Rahmenbestell-Nr. 4942613538
Lot-no.	98280
Number	1
Amount	284 g
Reception temperature	room temperature
Ordered by	Frau Edith von Kries
Submitted by	Frau Edith von Kries
Reception date time	14.08.2018
Packaging	plastic container with plastic screw closure
Start/end of analyses	16.08.2018 / 06.09.2018

TEST RESULTS

Physical-chemical Analysis

EF025 Water (Moisture) (102°C)

Method: ASU L 02.06-E(EG) & 1(EG)- 8(EG) Method 2:1981-01,, N01_04ME_v07, Gravimetry (Modification: Matrix also foodstuffs)

Subcontracted to a Eurofins laboratory accredited for this test.

Water content	4.07	g/100 g

EF024 Ash (mineral content)

Method: ASU L17.00-3, 1982-05, Ber. 2002-12, N01_05ME_v07, Gravimetry (Modification: Matrix also foodstuffs)

Subcontracted to a Eurofins laboratory accredited for this test.

Ash content	4.72	g/100 g

EF027 Protein

Method: DIN EN ISO 8968-1:2014-06, mod., N01_02ME_v07, Kjeldahl (titrimetry)

Subcontracted to a Eurofins laboratory accredited for this test.

Nitrogen (Kjeldahl)	12.519	g/100 g
Protein	78.24	g/100 g

EF026 Fat

Method: DIN 10342:1992-09, mod., N01_01ME_v09, Gravimetry (Modification: Matrix also food; adaption to implementation in a fully automatic hydrolysis and extraction device)

Subcontracted to a Eurofins laboratory accredited for this test.

Fat	5.73	g/100 g

This report replaces report number: AR-18-JC-157133-01

EF062 Fatty acid spectra relative

Method: Internal method, N07_05ME_v03, GC-FID

Subcontracted to a Eurofins laboratory accredited for this test.

C4:0, Butyric acid	<0.02	*	%
C6:0, Caproic acid	<0.02	*	%
C8:0, Caprylic acid	0.07		%
C10:0, Capric acid	0.08		%
C12:0, Lauric acid	0.14		%
C14:0, Myristic acid	1.76		%
C14:1w5, Myristoleic acid	0.03		%
C15:0, Pentadecanoic acid	0.08		%
C15:1w5, Pentadecenoic acid	<0.02	*	%
C16:0, Palmitic acid	46.26		%
C16:1w7, Palmitoleic acid	0.17		%
C17:0, Margaric acid	0.09		%
C17:1w7, Heptadecenoic acid	<0.02	*	%
C18:0, Stearic acid	3.65		%
C18:t1w9, trans-Oleic acid	0.17		%
C18:t1w7, trans-Vaccenic acid	0.02		%
C18:t1, trans isomers (except trans-Oleic- and tra	0.07		%
C18:1w9, Oleic acid	26.67		%
C18:1w7 Vaccenic acid	0.81		%
C18:t2, trans isomers	0.33		%
C18:2w6, Linoleic acid (LA)	17.26		%
C20:0, Arachidic acid	0.60		%
C18:3w6, g-Linolenic acid (GLA)	<0.02	*	%
C18:t3, trans isomers	<0.02	*	%
C20:1w9, Eicosenoic acid	0.36		%
C18:3w3, a-Linolenic acid (ALA)	0.40		%
C18:2conj., conjugated Linoleic acid (CLA)	<0.02	*	%
C21:0, Heneicosanoic acid	<0.02	*	%
C18:4w3, Stearidonic acid	<0.02	*	%
C20:2w6, Eicosadienoic acid	<0.02	*	%
C22:0, Behenic acid	0.24		%
C20:3w6, Eicosatrienoic acid	<0.02	*	%
C22:1w9, Erucic acid	<0.02	*	%
C20:3w3, Eicosatrienoic acid	<0.02	*	%
C20:4w6, Arachidonic acid (AA)	<0.02	*	%
C22:2w6, Docosadienoic acid	<0.02	*	%
C20:5w3, Eicosapentaenoic acid (EPA)	<0.02	*	%
C24:0, Lignoceric acid	0.72		%
C24:1w9, Nervonic acid	<0.02	*	%
C22:4w6, Docosatetraenoic acid	<0.02	*	%
C22:5w6, Docosapentaenoic acid	<0.02	*	%
C22:5w3, Docosapentaenoic acid	<0.02	*	%
C22:6w3 Docosahexanoic acid	<0.02	*	%
Non identified fatty acids	0.02		%
Sum saturated fatty acids (SFA)	53.69		%
Sum unsaturated fatty acids (UFA)	46.29		%
Sum monounsaturated fatty acids (MUFA)	28.30		%
Sum polyunsaturated fatty acids (PUFA)	17.99		%

This report replaces report number: AR-18-JC-157133-01

Sum trans fatty acids	0.59		%
Sum w3-fatty acids LCP	<0.02	*	%
Sum w6-fatty acids LCP	<0.02	*	%
Ratio w6 LCP / w3 LCP	Inapplicable		
Sum C18:2w6 + C18:3w3	17.66		%
Sum C18:3w3 + C18:3w6	0.40		%
Sum C20:4w6 + C22:6w3	<0.02	*	%
Ratio C18:2w6 / C18:3w3	43.15		
Ratio C20:4w6 / C22:6w3	Inapplicable		
Ratio PUFA / SFA	0.34		
Ratio SFA / UFA	1.16		
C18:2w6, Linoleic acid (LA) in product	0.94		g/100 g
C18:3w3, a-Linolenic acid (ALA) in product	0.02		g/100 g
C20:4w6, Arachidonic acid (AA) in product	<1.09		mg/100 g
C20:5w3, Eicosapentaenoic acid (EPA) iP	<1.09		mg/100 g
C22:6w3, Docosahexaenoic acid (DHA) in product	<1.09		mg/100 g
Sum saturated fatty acids (SFA) in product	2.92		g/100 g
Sum monounsaturated fatty acids (MUFA) in product	1.54		g/100 g
Sum polyunsaturated fatty acids (PUFA) in product	0.98		g/100 g

EF096 Dietary fibre in foodstuffs, total

Method: AOAC 991.43:1994, mod., N01_09ME_v02, Gravimetry
(Modification: No degreasing step; implementation with automated fibre analyzer)
Subcontracted to a Eurofins laboratory accredited for this test.

Fibre total dietary	7.9		g/100 g

EF028 Sugars (Glucose,Fructose,Lactose,Maltose, Sucrose)

Method: Internal method, N02_01ME_v04, LC-RI
Subcontracted to a Eurofins laboratory accredited for this test.

Fructose	<0.1	*	g/100 g
Glucose	<0.1	*	g/100 g
Sucrose	<0.1	*	g/100 g
Maltose	<0.2	*	g/100 g
Lactose	<0.2	*	g/100 g
Sum of mono- and disaccharides	<0.07	*	g/100 g

EF086 Carbohydrates calculated (difference)

Method: according NKV, N01_20AA_v01, Calculation
Subcontracted to a Eurofins laboratory

Carbohydrate calculated (difference)	< 0.1		g/100 g

EF085 Caloric value

Method: according NKV, N01_20AA_v01, Calculation
Subcontracted to a Eurofins laboratory accredited for this test.

Energy value (kcal)	1594		kcal/100 g
Energy value (kJ)	376		kJ/100 g

J1001 Sample preparation (#)

Method: §64 LFGB L 00.00-19/1, CON-PV 00001 (2016-06), Digestion (microwave)

JCM03 Lead (Pb) (#)

Method: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS
(Modification: incl. ICP-MS/MS, extension of the analysis parameters, extension of the application scope to feed and tabacco/-products)

Lead (Pb)	0.24		mg/kg
	± 0.05		mg/kg

This report replaces report number: AR-18-JC-157133-01

JCM04 Cadmium (Cd) (#)
Method: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS
(Modification: incl. ICP-MS/MS, extension of the analysis parameters, extension of the application scope to feed and tabacco/-products)

Cadmium (Cd)	0.25	mg/kg
	± 0.05	mg/kg

JCHG2 Mercury (Hg) (#)
Method: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS
(Modification: incl. ICP-MS/MS, extension of the analysis parameters, extension of the application scope to feed and tabacco/-products)

Mercury (Hg)	0.017	mg/kg
	± 0.005	mg/kg

JC00M Arsenic (As) (#)
Method: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS
(Modification: incl. ICP-MS/MS, extension of the analysis parameters, extension of the application scope to feed and tabacco/-products)

Arsenic (As)	0.07	mg/kg
	± 0.04	mg/kg

J1043 Iron (Fe) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Iron (Fe)	260	mg/kg
	± 52	mg/kg

J1048 Sodium (Na) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Sodium (Na)	17000	mg/kg
	± 3400	mg/kg

J1045 Potassium (K) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Potassium (K)	150	mg/kg
	± 30	mg/kg

J1038 Calcium (Ca) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Calcium (Ca)	1000	mg/kg
	± 200	mg/kg

EF057 Nitrate
Method: DIN EN ISO 14673-1:2004-05, R04_04ME_v07, Spectrophotometry (CFA)
Subcontracted to a Eurofins laboratory accredited for this test.

Nitrate (as NO3)	124	mg/kg

EF058 Nitrite
Method: DIN EN ISO 14673-1:2004-05, R04_04ME_v07, Spectrophotometry (CFA)
Subcontracted to a Eurofins laboratory accredited for this test.

Nitrite (as NO2)	3.5	mg/kg

This report replaces report number: AR-18-JC-157133-01

GFL05 Dioxins and Furans (17 PCDD/F)
Method: Internal, GLS DF 110, GC-MS/MS
Subcontracted to a Eurofins laboratory accredited for this test.

2,3,7,8-TetraCDD	< 0.0126	pg/g
1,2,3,7,8-PentaCDD	< 0.0166	pg/g
1,2,3,4,7,8-HexaCDD	< 0.0252	pg/g
1,2,3,6,7,8-HexaCDD	0.207	pg/g
1,2,3,7,8,9-HexaCDD	< 0.0326	pg/g
1,2,3,4,6,7,8-HeptaCDD	5.98	pg/g
OctaCDD	31.8	pg/g
2,3,7,8-TetraCDF	0.0440	pg/g
1,2,3,7,8-PentaCDF	0.0259	pg/g
2,3,4,7,8-PentaCDF	< 0.0372	pg/g
1,2,3,4,7,8-HexaCDF	0.0640	pg/g
1,2,3,6,7,8-HexaCDF	0.0660	pg/g
1,2,3,7,8,9-HexaCDF	< 0.0266	pg/g
2,3,4,6,7,8-HexaCDF	< 0.0326	pg/g
1,2,3,4,6,7,8-HeptaCDF	0.413	pg/g
1,2,3,4,7,8,9-HeptaCDF	0.0609	pg/g
OctaCDF	0.643	pg/g
WHO(2005)-PCDD/F TEQ (lower-bound)	0.113	pg/g
WHO(2005)-PCDD/F TEQ (medium-bound)	0.139	pg/g
WHO(2005)-PCDD/F TEQ (upper-bound)	0.165	pg/g

GFL11 polychlorinated biphenyls (12 WHO PCB + 6 ICES PCB)
Method: Internal, GLS DF 110, GC-MS/MS
Subcontracted to a Eurofins laboratory accredited for this test.

PCB 77	3.59	pg/g
PCB 81	< 0.179	pg/g
PCB 105	10.5	pg/g
PCB 114	0.858	pg/g
PCB 118	26.0	pg/g
PCB 123	0.528	pg/g
PCB 126	< 0.166	pg/g
PCB 156	2.83	pg/g
PCB 157	0.533	pg/g
PCB 167	1.12	pg/g
PCB 169	< 0.797	pg/g
PCB 189	< 0.266	pg/g
WHO(2005)-PCB TEQ (lower-bound)	0.00163	pg/g
WHO(2005)-PCB TEQ (medium-bound)	0.0219	pg/g
WHO(2005)-PCB TEQ (upper-bound)	0.0422	pg/g
PCB 28	< 0.0664	ng/g
PCB 52	< 0.0664	ng/g
PCB 101	< 0.0664	ng/g
PCB 138	< 0.0664	ng/g
PCB 153	< 0.0664	ng/g
PCB 180	< 0.0664	ng/g
Total 6 ndl-PCB (lower-bound)	ND	ng/g
Total 6 ndl-PCB (medium-bound)	0.199	ng/g
Total 6 ndl-PCB (upper-bound)	0.399	ng/g

Analytical report: AR-18-JC-157133-02
Sample Code 706-2018-00146675

eurofins | WEJ Contaminants

This report replaces report number: AR-18-JC-157133-01

GFTE1 TEQ-Totals WHO-PCDD/F and PCB
Method: Internal, GLS DF 110, 120, 130, 140, Calculation
Subcontracted to a Eurofins laboratory accredited for this test.

WHO(2005)-PCDD/F+PCB TEQ (lower-bound)	0.115	pg/g
WHO(2005)-PCDD/F+PCB TEQ (medium-bound)	0.161	pg/g
WHO(2005)-PCDD/F+PCB TEQ (upper-bound)	0.208	pg/g

SP101 Organochlorine Pesticides and Pyrethroids (GC-ECD)
Method: ASU L 00.00-34:2010-09, DFG-S19, GC-ECD
Subcontracted to a Eurofins laboratory accredited for this test.

Screened pesticides	Not Detected	

SP104 Organophosphorus Pesticides (GC-FPD)
Method: ASU L 00.00-34:2010-09, DFG-S19, GC-FPD
Subcontracted to a Eurofins laboratory accredited for this test.

Screened pesticides	Not Detected	

A0428 Aflatoxins B1, B2, G1, G2 (Baby food, dietary food) (#)
Method: DIN EN 15851, (2010-07), mod., CON-PV 00855 (2017-06), IAC-LC-FLD
(Modification: sample weight, extraction solvent, enrichment on IAC, no solvent exchange, additional determination of Aflatoxin B2, G1 and G2)

Aflatoxin B1	1.01		µg/kg
	± 0.40		µg/kg
Aflatoxin B2	0.04		µg/kg
	± 0.02		µg/kg
Aflatoxin G1	<0.01	*	µg/kg
Aflatoxin G2	<0.01	*	µg/kg
Sum of all positive Aflatoxins	1.05		µg/kg

JJ0FH Ochratoxin A (spices, special matrix) low LOQ (#)
Method: DIN EN 14132, mod., CON-PV 00850 (2017-05), IAC-LC-FLD
(Modification: sample weight, extraction solvent, IAC-volumina and buffer, postcolumn derivatization, extension of the scope to other food and feed)

Ochratoxin A (OTA)	0.6		µg/kg
	± 0.2		µg/kg

JJ0FE Fusarium toxins (DON, ZON, T2, HT2) (#)
Method: Internal, CON-PV 01126 (2018-08), LC-MS/MS

Deoxynivalenol (Vomitoxin)	<20	*	µg/kg
Zearalenone (ZON)	32		µg/kg
	± 13		µg/kg
T-2 Toxin	<10	*	µg/kg
HT-2 Toxin	<10	*	µg/kg
sum T-2 HT-2 toxin	<20	*	µg/kg

JJ0BG Fumonisins (#)
Method: Internal, CON-PV 01085 (2018-08), LC-MS/MS

Fumonisin B1 (FB1)	<20	*	µg/kg
Fumonisin B2 (FB2)	<20	*	µg/kg
Fumonisin sum (B1+B2)	<40	*	µg/kg

* = Below indicated quantification level
(#) = Eurofins WEJ Contaminants GmbH (Hamburg) is accredited for this test.
Result +/- expanded measurement uncertainty (95%; k=2), sampling not included

Signature

Analytical Service Manager (Doris Zarthe)

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BASF Personal Care and Nutrition GmbH
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89251 Illertissen

Sachbearbeiter	Ms D. Zarthe	- 2907
Kundenbetreuer	Ms D. Zarthe	- 2907

Prüfberichtsdatum 02.01.2019

Prüfbericht: AR-19-JC-000191-01

Proben - Nr. 706-2018-00240120

Betrifft	Rice Protein Hydrolisate, DH 5958
Probennummer Kunde	99353
Kundenreferenznummer	Rahmenbestell-Nr. 4935285868
Anzahl Probenbehälter	1
Bruttogewicht /-volumen	71 g
Eingangstemperatur	Raumtemperatur
Auftraggeber	Frau Edith von Kries
Einsender	Frau Edith von Kries
Überbringer	DHL
Eingangsdatum	14.12.2018
Verpackung	Kunststoffbehältnis mit Kunststoffverschluss, geschraubt
Beginn/Ende der Untersuchungen	19.12.2018 / 30.12.2018

PRÜFERGEBNIS

Physikalisch-chemische Untersuchung

DI004 Gesamtanalyse Aminosäuren (saure Hydrolyse)

Methode: EU 152/2009 (F), ISO 13903:2005, AMSUR, IC-UV

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Alanin	4,52	g/100 g
	± 0,633	g/100 g
Asparaginsäure	7,11	g/100 g
	± 0,996	g/100 g
Gesamtarginin	6,30	g/100 g
	± 0,883	g/100 g
Glutaminsäure	14,1	g/100 g
	± 1,98	g/100 g
Glycin	3,52	g/100 g
	± 0,493	g/100 g
Histidin	1,80	g/100 g
	± 0,252	g/100 g
Isoleucin	3,25	g/100 g
	± 0,455	g/100 g
Leucin	6,61	g/100 g
	± 0,925	g/100 g
Lysin	2,49	g/100 g
	± 0,348	g/100 g

Phenylalanin	4,36		g/100 g
	± 0,611		g/100 g
Prolin	3,75		g/100 g
	± 0,525		g/100 g
Serin	4,19		g/100 g
	± 0,587		g/100 g
Tyrosin	4,30		g/100 g
	± 0,602		g/100 g
Valin	4,87		g/100 g
	± 0,682		g/100 g
Threonin	2,92		g/100 g
	± 0,409		g/100 g
Hydroxyprolin	<0.05	*	g/100 g
Ornithin	<0.05	*	g/100 g

* = Der angegebene Wert entspricht der Bestimmungsgrenze

Ergebnis +/- erweiterte Messunsicherheit (95%; k=2), Probenahme nicht eingeschlossen

Unterschrift

Analytical Service Manager (Doris Zarthe)

BATCH #2 DATA

Labor LS SE & Co. KG Mangelsfeld 4, 5, 6 | 97708 Bad Bocklet | Germany

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Ms Margit Kapitzke
Robert-Hansen-Straße 1
89257 Illertissen

Fon: +49 (0)97 08/91 00-0
labor@labor-ls.de
www.labor-ls.de

Bad Bocklet 17 Sep 2018 / JGE / Basfll

Certificate of Analysis

L+S No:	180913-0029-001	**L+S Code:**	1193133 / L
Product name:	Rice protein hydrolysate, L 25913		
Description:	Proben-Nr: 98523		
Entry temperature:	room temperature		
Your Order No:	4944273100		
Your Cost Unit:	7D660009		
Order dated:	12 Sep 2018	**Sample receipt:**	13 Sep 2018
Start of test:	13 Sep 2018	**End of test:**	17 Sep 2018

according to paragraph 64 LFGB*

Parameter	Method	Specification / Demands	Result
Sporen aerober Sporenbildner, quantitativ	L+S SOP 9.036		60 CFU / g
Bacillus cereus präsumtiv, quantitativ	*L 00.00 - 33, mod.		< 10 CFU / g DIN EN ISO 7932. mod.
Escherichia coli, qualitative	L+S SOP 9.009		not detected / g
Enterobacteriaceae, quantitative	*L 00.00-133/2, mod.		< 10 CFU / g DIN EN ISO 21528-2
total viable count, aerobic mesophilic 30°C	*L 00.00 - 88/2 mod.		80 CFU / g DIN EN ISO 4833-2. mod.
yeasts, quantitative	*L 01.00 - 37, mod.		< 10 CFU / g ISO 21527. mod.
Salmonella sp., qualitative	*L 00.00 - 20		not detected / 25 g DIN EN ISO 6579-1
molds, quantitative	*L 01.00 - 37, mod.		< 10 CFU / g ISO 21527. mod.

This document was created by a GMP-supervised LIMS and approved by electronic signature.

Approved on 17 Sep 2018 at 14:01 by Franziska Hofmann, Team Manager.

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AG Schweinfurt - HRA 9940

USt.-Id.: DE 317 022 554
EORI-Nr.: DE 924 152 552 472 760

Ärztlicher Leiter:
PD Dr. med. Andreas Schwarzkopf

Hypo Vereinsbank Schweinfurt
Deutsche Bank Würzburg

Pers. haftende Gesellschafterin:
Labor LS SE Verwaltungsgesellschaft
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AG Schweinfurt - HRB 7765

IBAN: DE10 7932 0075 0002 0110 00
IBAN: DE08 7907 0016 0840 1325 00

Verwaltungsrat (Vors.):
Dipl. Kfm. Werner Wohnhas
Geschäftsführende Direktoren:
Dr. Frank Böttcher,
Dr. Peter Löprick, Dr. Jürgen Balles

BIC: HYVEDEMM451
BIC: DEUTDEMM790

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Prüfbericht 3973816
Auftrags Nr. 4678832
Kunden Nr. 10078225

Mandy Elias
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Agriculture, Food

SGS Germany GmbH
Rödingsmarkt 16
20459 Hamburg

DAkkS Deutsche Akkreditierungsstelle D-PL-11020-04-01

Hamburg, den 12.09.2018

Ihr Auftrag/Projekt: Reisproteinhydrolysat
Ihre Bestellnummer: 4942469521
Ihr Bestelldatum: 05.09.2018

Allgemeine Angaben:

Proben-Nr.:	180885337
Probennummer des Kunden:	98514
Probe:	Reisproteinhydrolysat Probe 98514
Probeneingangsdatum:	07.09.2018
Untersuchungsbeginn / -ende:	07.09.2018 / 11.09.2018
Menge:	85g
Verpackungsart:	Plastic bottle

Untersuchungsergebnisse:

Parameter	Methode	Lab	Einheit	Ergebnis	Bestimmungsgrenze	Anforderung
PAK						
Benzo(a)anthracen	SOP M 2920, GC/MS	HH	µg/kg	< 0,2	0,2	
Chrysen	SOP M 2920, GC/MS	HH	µg/kg	< 0,2	0,2	
Benzo(b)fluoranthen	SOP M 2920, GC/MS	HH	µg/kg	< 0,2	0,2	
Benzo(a)pyren	SOP M 2920, GC/MS	HH	µg/kg	< 0,2	0,2	
Summe PAK 4 (Benzo(a)anthracen, Benzo(a)pyren, Benzo(b)fluoranthen, Chrysen)		HH	µg/kg	< 0,2		

Die Laborstandorte der SGS-Gruppe Deutschland und Schweiz gemäß den oben genannten Kürzeln sind aufgeführt unter http://www.institut-fresenius.de/filestore/89/laborstandortkuerzelsgs2.pdf.

SGS Germany GmbH

Zusammenfassung der verwendeten Prüfmethoden:

SOP M 2920, GC/MS	12/2016

*** Ende des Berichts ***

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Sachbearbeiter	Ms D. Zarthe	- 2907
Kundenbetreuer	Ms D. Zarthe	- 2907

Prüfberichtsdatum 10.09.2018

Prüfbericht: AR-18-JC-159423-01

Proben - Nr. 706-2018-00160591

Betrifft	Reisproteinhydrolysatpulver (STAM/LI)
Probennummer Kunde	50572136
Kundenreferenznummer	Rahmenbestell-Nr. 4942613538
Lot/Los-Nr.	0019552865
Anzahl Probenbehälter	1
Bruttogewicht /-volumen	333 g
Eingangstemperatur	Raumtemperatur
Auftraggeber	Frau Edith von Kries
Einsender	Frau Edith von Kries
Überbringer	DHL
Eingangsdatum	04.09.2018
Verpackung	Kunststoffbehältnis mit Kunststoffverschluss, geschraubt
Beginn/Ende der Untersuchungen	04.09.2018 / 10.09.2018

PRÜFERGEBNIS

Physikalisch-chemische Untersuchung

DI004 Gesamtanalyse Aminosäuren (saure Hydrolyse)

Methode: EU 152/2009 (F), ISO 13903:2005, AMSUR, IC-UV

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Alanin	4,80	g/100 g
	± 0,672	g/100 g
Asparaginsäure	7,48	g/100 g
	± 1,05	g/100 g
Gesamtarginin	6,71	g/100 g
	± 0,939	g/100 g
Glutaminsäure	15,2	g/100 g
	± 2,13	g/100 g
Glycin	3,95	g/100 g
	± 0,553	g/100 g
Histidin	1,96	g/100 g
	± 0,275	g/100 g
Isoleucin	3,43	g/100 g
	± 0,480	g/100 g
Leucin	7,01	g/100 g
	± 0,981	g/100 g

Lysin	2,66		g/100 g
	± 0,373		g/100 g
Phenylalanin	4,54		g/100 g
	± 0,636		g/100 g
Prolin	3,99		g/100 g
	± 0,559		g/100 g
Serin	4,28		g/100 g
	± 0,600		g/100 g
Tyrosin	4,41		g/100 g
	± 0,617		g/100 g
Valin	5,10		g/100 g
	± 0,714		g/100 g
Threonin	3,10		g/100 g
	± 0,434		g/100 g
Hydroxyprolin	<0.05	*	g/100 g
Ornithin	<0.05	*	g/100 g

J1001 Druckaufschluss (#)
Methode: §64 LFGB L 00.00-19/1, CON-PV 00001 (2016-06), Mikrowellenaufschluss

J8306 Blei (Pb) (#)
Methode: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS (Modifikation: inkl. ICP-MS/MS, Erweiterung der Analysenparameter, Erweiterung des Anwendungsbereiches auf Futtermittel und Tabak/-erzeugnisse)

Blei (Pb)	0,41		mg/kg
	± 0,09		mg/kg

J8308 Cadmium (Cd) (#)
Methode: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS (Modifikation: inkl. ICP-MS/MS, Erweiterung der Analysenparameter, Erweiterung des Anwendungsbereiches auf Futtermittel und Tabak/-erzeugnisse)

Cadmium (Cd)	0,6		mg/kg
	± 0,12		mg/kg

JCHG2 Quecksilber (Hg) (#)
Methode: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS (Modifikation: inkl. ICP-MS/MS, Erweiterung der Analysenparameter, Erweiterung des Anwendungsbereiches auf Futtermittel und Tabak/-erzeugnisse)

Quecksilber (Hg)	0,019		mg/kg
	± 0,006		mg/kg

J8312 Arsen (As) (#)
Methode: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS (Modifikation: inkl. ICP-MS/MS, Erweiterung der Analysenparameter, Erweiterung des Anwendungsbereiches auf Futtermittel und Tabak/-erzeugnisse)

Arsen (As)	<0,1	*	mg/kg

J1043 Eisen (Fe) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES (Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Eisen (Fe)	310		mg/kg
	± 62		mg/kg

J1048 Natrium (Na) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES (Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Natrium (Na)	15000		mg/kg
	± 3000		mg/kg

Eurofins WEJ Contaminants GmbH · Neuländer Kamp 1 · D-21079 Hamburg
Sitz und Gerichtsstand der Gesellschaft: Hamburg – Amtsgericht Hamburg HRB 106641 Geschäftsführer: Dr. Claudia Schulz
Ust ID.Nr.: DE263765651
Nord/LB (BLZ 250 500 00) Konto-Nr. 199 895 004 SWIFT-BIC NOLADE2HXXX IBAN DE 7425 0500 0001 9989 5004

J1045 Kalium (K) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Kalium (K)	3100		mg/kg
	± 620		mg/kg

J1038 Calcium (Ca) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Calcium (Ca)	1600		mg/kg
	± 320		mg/kg

JJ0F0 Aflatoxine B1, B2, G1, G2 (Gewürze, Spezialmatrix) low LOQ (#)
Methode: DIN EN 14123, mod., CON-PV 00873 (2018-08), IAC-LC-FLD
(Modifikation: Probeneinwaage, Extraktionslösung, IAS-Volumen und Puffer, Erweiterung des Anwendungsbereichs auf weitere Lebensmittel und Futtermittel)

Aflatoxin B1	0,2		µg/kg
	± 0,1		µg/kg
Aflatoxin B2	<0,1	*	µg/kg
Aflatoxin G1	<0,1	*	µg/kg
Aflatoxin G2	<0,1	*	µg/kg
Summe der bestimmten Aflatoxine	0,2		µg/kg

JJ0FH Ochratoxin A (Gewürze, Spezialmatrix) low LOQ (#)
Methode: DIN EN 14132, mod., CON-PV 00850 (2017-05), IAC-LC-FLD
(Modifikation: Probeneinwaage, Extraktionslösung, IAS-Volumen und Puffer, Nachsäulenderivatisierung, Erweiterung des Anwendungsbereichs auf weitere Lebensmittel und Futtermittel)

Ochratoxin A (OTA)	<0,2	*	µg/kg

JJ0FE Fusarientoxine klein (DON , ZON, T2, HT2) (#)
Methode: Interne Methode, CON-PV 01126 (2018-08), LC-MS/MS

Deoxynivalenol (Vomitoxin)	29		µg/kg
	± 12		µg/kg
Zearalenon (ZON)	<10	*	µg/kg
T-2 Toxin	<10	*	µg/kg
HT-2 Toxin	<10	*	µg/kg
Summe T-2 HT-2 Toxin	<20	*	µg/kg

JJ0BG Fumonisine (#)
Methode: Interne Methode, CON-PV 01085 (2018-08), LC-MS/MS

Fumonisin B1 (FB1)	<20	*	µg/kg
Fumonisin B2 (FB2)	<20	*	µg/kg
Fumonisine (Summe B1+B2)	<40	*	µg/kg

* = Der angegebene Wert entspricht der Bestimmungsgrenze

(#) = Eurofins WEJ Contaminants GmbH (Hamburg) ist für diesen Test akkreditiert.

Ergebnis +/- erweiterte Messunsicherheit (95%; k=2), Probenahme nicht eingeschlossen

Unterschrift

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Sachbearbeiter	Ms D. Zarthe	- 2907
Kundenbetreuer	Ms D. Zarthe	- 2907

Prüfberichtsdatum 18.09.2018

Prüfbericht: AR-18-JC-163727-01

Proben - Nr. 706-2018-00163420

Betrifft	Reisproteinhydrolysat
Probennummer Kunde	98514
Auftragsnummer Kunde	4935285868
Kundenreferenznummer	Rahmenbestell-Nr. 4942613538
Anzahl Probenbehälter	1
Bruttogewicht /-volumen	186 g
Eingangstemperatur	Raumtemperatur
Auftraggeber	Frau Edith von Kries
Einsender	Frau Edith von Kries
Überbringer	DHL
Eingangsdatum	07.09.2018
Verpackung	Kunststoffbehältnis mit Kunststoffverschluss, geschraubt
Beginn/Ende der Untersuchungen	08.09.2018 / 17.09.2018

PRÜFERGEBNIS

Physikalisch-chemische Untersuchung

GFL05 Dioxine und Furane (17 PCDD/F)

Methode: Interne Methode, GLS DF 110, GC-MS/MS

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

2,3,7,8-TetraCDD	< 0,0113	pg/g
1,2,3,7,8-PentaCDD	0,0153	pg/g
1,2,3,4,7,8-HexaCDD	< 0,0226	pg/g
1,2,3,6,7,8-HexaCDD	0,140	pg/g
1,2,3,7,8,9-HexaCDD	0,0380	pg/g
1,2,3,4,6,7,8-HeptaCDD	2,06	pg/g
OctaCDD	6,11	pg/g
2,3,7,8-TetraCDF	0,0453	pg/g
1,2,3,7,8-PentaCDF	0,0322	pg/g
2,3,4,7,8-PentaCDF	0,0440	pg/g
1,2,3,4,7,8-HexaCDF	0,0721	pg/g
1,2,3,6,7,8-HexaCDF	0,0511	pg/g
1,2,3,7,8,9-HexaCDF	< 0,0238	pg/g
2,3,4,6,7,8-HexaCDF	0,0517	pg/g
1,2,3,4,6,7,8-HeptaCDF	0,351	pg/g
1,2,3,4,7,8,9-HeptaCDF	< 0,0232	pg/g

OctaCDF	< 0,0714	pg/g	
WHO(2005)-PCDD/F TEQ exkl. BG	0,0952	pg/g	
WHO(2005)-PCDD/F TEQ inkl. 1/2 BG	0,103	pg/g	
WHO(2005)-PCDD/F TEQ inkl. BG	0,111	pg/g	

GFL11 Polychlorierte Biphenyle (12 WHO PCB + 6 ICES PCB)
Methode: Interne Methode, GLS DF 110, GC-MS/MS
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

PCB 77	< 1,07	pg/g	
PCB 81	< 0,161	pg/g	
PCB 105	< 2,32	pg/g	
PCB 114	< 0,315	pg/g	
PCB 118	< 8,33	pg/g	
PCB 123	< 0,238	pg/g	
PCB 126	< 0,149	pg/g	
PCB 156	< 1,31	pg/g	
PCB 157	< 0,244	pg/g	
PCB 167	< 0,654	pg/g	
PCB 169	< 0,714	pg/g	
PCB 189	< 0,238	pg/g	
WHO(2005)-PCB TEQ exkl. BG	ND	pg/g	
WHO(2005)-PCB TEQ inkl. 1/2 BG	0,0184	pg/g	
WHO(2005)-PCB TEQ inkl. BG	0,0369	pg/g	
PCB 28	< 0,0595	ng/g	
PCB 52	< 0,0595	ng/g	
PCB 101	< 0,0595	ng/g	
PCB 138	< 0,0595	ng/g	
PCB 153	< 0,0595	ng/g	
PCB 180	< 0,0595	ng/g	
Summe 6 ndl-PCB exkl. BG	ND	ng/g	
Summe 6 ndl-PCB inkl. 1/2 BG	0,178	ng/g	
Summe 6 ndl-PCB inkl. BG	0,357	ng/g	

GFTE1 TEQ-Summe der WHO-PCDD/F und PCB
Methode: Interne Methode, GLS DF 110, 120, 130, 140, Berechnung
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

WHO(2005)-PCDD/F+PCB TEQ exkl. BG	0,0952	pg/g	
WHO(2005)-PCDD/F+PCB TEQ inkl. 1/2 BG	0,122	pg/g	
WHO(2005)-PCDD/F+PCB TEQ inkl. BG	0,148	pg/g	

SP101 Organochlorpestizide und Pyrethroide (GC-ECD)
Methode: ASU L 00.00-34:2010-09, DFG-S19, GC-ECD
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Polychlorterpene (Camphechlor)	<0,05	*	mg/kg
Weitere gesuchte Pestizide	nicht nachweisbar		

SP104 Organophosphorpestizide (GC-FPD)
Methode: ASU L 00.00-34:2010-09, DFG-S19, GC-FPD
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Gesuchte Pestizide	nicht nachweisbar		

SP931 Pestizidscreening Quechers LC-MS/MS
Methode: DIN EN 15662:2009-02, mod., P-14.141, LC-MS/MS
(Modifikation: Salzverhältnis Sorptionsgemisch angepasst)
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Gesuchte Pestizide	nicht nachweisbar		

Prüfbericht: AR-18-JC-163727-01
Proben-Nr. 706-2018-00163420

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SP111 Organostickstoffpestizide und weitere (GC-MS)
Methode: ASU L 00.00-34:2010-09, DFG-S19, GC-MS
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Gesuchte Pestizide	nicht nachweisbar

* = Der angegebene Wert entspricht der Bestimmungsgrenze
Ergebnis +/- erweiterte Messunsicherheit (95%; k=2), Probenahme nicht eingeschlossen

Unterschrift

Analytical Service Manager (Doris Zarthe)

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Person in charge	Ms D. Zarthe	- 2907
Client support	Ms D. Zarthe	- 2907

Report date 19.09.2018

Analytical report: AR-18-JC-165565-01

Sample Code 706-2018-00169216

Reference	Rice protein hydrolysate
Client Sample Code	98523
Client contract reference	Rahmenbestell-Nr. 4942613538
Lot-no.	L25913
Number	1
Amount	68 g
Reception temperature	room temperature
Ordered by	Frau Edith von Kries
Submitted by	Frau Edith von Kries
Reception date time	17.09.2018
Packaging	plastic container with plastic screw closure
Start/end of analyses	17.09.2018 / 19.09.2018

TEST RESULTS

Physical-chemical Analysis

EF057 Nitrate

Method: DIN EN ISO 14673-1:2004-05, R04_04ME_v07, Spectrophotometry (CFA)

Subcontracted to a Eurofins laboratory accredited for this test.

Nitrate (as NO3)	40.8	mg/kg

EF058 Nitrite

Method: DIN EN ISO 14673-1:2004-05, R04_04ME_v07, Spectrophotometry (CFA)

Subcontracted to a Eurofins laboratory accredited for this test.

Nitrite (as NO2)	1.4	mg/kg

Result +/- expanded measurement uncertainty (95%; k=2), sampling not included

Signature

Analytical Service Manager – Contaminants (Jana Stanko)

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

Analytik, Gutachten, Beratung

Chemisches Labor Dr. Wirts +
Partner Sachverständigen GmbH
Rutenbergstr. 59
D-30559 Hannover
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DAkkS
Deutsche
Akkreditierungsstelle
D-PL-14001-01-00

irts + Partner Gmb · -30559 Hannover

BASF Personal Care and Nutrition GmbH
Robert- Hansen- Str. 1
89257 Illertissen

Prüfbericht

Datum: 17.09.2018

Prüfberichts-Nr.:	PB1810183 L
Auftragseingang:	07.09.2018
Auftragserteilung:	schriftlich durch Auftraggeber
Prüfauftrag:	Nährwertanalyse
Proben-Nr.:	**318020534-01**
Prüfgegenstand:	Reisproteinhydrolysat
Kennzeichnung:	Reisproteinhydrolysat Material 50572136 Charge 0019552865 (StAM/LI)
Verpackung:	Kunststoffflasche
Probemenge:	ca. 100 g
Probenahme:	durch Auftraggeber
Probenanlieferung:	07.09.2018 durch Paketdienst

Verantwortlich für den Prüfbericht

Staatl. gepr. Lebensmittelchemiker Dieter Lange
Prüfbereichsleitung Lebensmittel

Chemisches Labor Dr. Wirts + Partner Sachverständigen GmbH Geschäftsführer: Dr. C. Wirts Amtsgericht Hannover HRB 54381
Hannoversche Volksbank **BLZ** 251 900 01 **Kto.-Nr** 12998400 **BIC** VOHADE2HXXX **IBAN** DE63 2519 0001 0012 9984 00 **USt-IdNr** DE164011600 **St-Nr** 25 217 21217

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

PRÜFERGEBNISSE **Prüfzeitraum: 07.09.2018 - 17.09.2018**

Chemisch-physikalische Untersuchungen

Wasser	(ASU L06.00-3: 1980-09)$_a$	:	2,8	g/100 g
Fett	(ASU L01.00-20: 1998-05 (Weibull-Stoldt))$_a$	:	3,4	g/100 g
- davon gesättigte Fettsäuren	(berechnet)	:	0,9	g/100 g
Eiweiß	(ASU L06.00-7: 2007-04)$_a$	:	81,3	g/100 g
Asche	(ASU L06.00-4: 2007-04)$_a$	:	4,9	g/100 g
Gesamtballaststoffe	(ASU L00.00-18: 1997-01)$_a$	:	7,2	g/100 g
Kohlenhydrate	(Differenz zu 100)	:	0,4	g/100 g
- davon Zucker	(berechnet)	:	<0,7	g/100 g
Saccharose	(enzymatisch)$_a$	:	<0,2	g/100 g
Glucose	(enzymatisch)$_a$	:	<0,1	g/100 g
Fructose	(enzymatisch)$_a$	:	<0,1	g/100 g
Maltose	(enzymatisch)$_a$	:	<0,2	g/100 g
Lactose	(ASU L 01.00-17)$_a$	:	<0,1	g/100 g
Energie	(VO(EU) 1169/2011)	:	1.573	kJ/100 g
Energie	(VO(EU) 1169/2011)	:	372	kcal/100 g
Natrium	(DIN EN ISO 11885:2009-09)$_a$	:	1,3	g/100 g
Natrium als Salz	(berechnet)	:	3,3	g/100 g
Fettsäurespektrum	(ASU L23.04-1 (EG): 2002-12)	:	siehe Anlage	

Zeichenerklärung:
a= akkreditiertes Verfahren | f=Fremduntersuchung in akkreditiertem Labor | u = Unterauftrag | < = unterhalb Bestimmungsgrenze

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

Anlage zur Probe 318020534-01

Fettsäurespektrum	**(ASU L23.04-1 (EG): 2002-12)$_a$**	
Capronsäure (C6:0)	%	<0,1
Caprylsäure (C8:0)	%	<0,1
Caprinsäure (C10:0)	%	<0,1
Laurinsäure (C12:0)	%	<0,1
Tridecansäure (C13:0)	%	<0,1
Myristinsäure (C14:0)	%	0,6
Myristoleinsäure (C14:1)	%	<0,1
Pentadecansäure (C15:0)	%	<0,1
Pentadecensäure (C15:1)	%	<0,1
Palmitinsäure (C16:0)	%	21,1
Palmitoleinsäure (C16:1)	%	0,2
Heptadecansäure (C17:0)	%	<0,1
Heptadecensäure (C17:1)	%	<0,1
Stearinsäure (C18:0)	%	2,2
Octadecensäure (C18:1)	%	33,7
Linolsäure (C18:2)**	%	38,4
α-Linolensäure (C18:3n3)*	%	1,1
γ- Linolensäure (C18:3n6)**	%	<0,1
Octadecatetraensäure (C18:4)*	%	<0,1
Nonadecansäure (C19:0)	%	<0,1
Arachinsäure (C20:0)	%	0,7
Eicosensäure (C20:1)	%	0,4
Eicosadiensäure (C20:2)**	%	<0,1
Eicosatriensäure (C20:3)**	%	<0,1
Eicosatetraensäure (C20:4)**	%	<0,1
Eicosapentaensäure (C20:5)*	%	<0,1
Heneicosansäure (C21:0)	%	<0,1
Behensäure (C22:0)	%	0,4
Erucasäure (C22:1n9)	%	<0,1
Cetoleinsäure (C22:1n11)	%	<0,1
Docosadiensäure (C22:2)**	%	<0,1
Docosatetraensäure (C22:4)**	%	<0,1
Clupanodonsäure (C22:5)*	%	<0,1
Docosahexaensäure (C22:6)*	%	<0,1
Tricosansäure (C23:0)	%	<0,1
Lignocerinsäure (C24:0)	%	0,8
Tetracosensäure (C24:1)	%	<0,1
Pentacosansäure (C25:0)	%	<0,1
Cerotinsäure (C26:0)	%	0,2
Summe der Fettsäuren		
gesättigte Fettsäuren	%	26,1
einfach ungesättigte Fettsäuren	%	34,2
mehrfach ungesättigte Fettsäuren	%	39,5
transisomere Fettsäuren	%	0,2
Summe der Fettsäuren im Produkt		
Fettgehalt gravimetrisch	g/100 g	3,4
Gesättigte Fettsäuren	g/100 g	0,9
Einfach ungesättigte Fettsäuren	g/100 g	1,2
Mehrfach ungesättigte Fettsäuren	g/100 g	1,3
Fettsäuregehalt berechnet	g/100 g	3,2
Transisomere Fettsäuren	g/100 g	<0,01

* omega-3-Fettsäuren |** omega-6-Fettsäuren | a= Akkreditiertes Prüfverfahren

Transisomere Fettsäuren		
C18:1	%	<0,1
C18:2	%	0,2
C18:3	%	<0,1

BATCH #3 DATA

Labor LS SE & Co. KG Mangelsfeld 4, 5, 6 | 97708 Bad Bocklet | Germany

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Ms Margit Kapitzke
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www.labor-ls.de

Bad Bocklet 17 Sep 2018 / JGE / Basfll

Certificate of Analysis

L+S No:	180913-0027-001	**L+S Code:**	1193129 / L
Product name:	Rice protein hydrolysate, L 25914		
Description:	Proben-Nr: 98524		
Entry temperature:	room temperature		
Your Order No:	4944273100		
Your Cost Unit:	7D660009		
Order dated:	12 Sep 2018	**Sample receipt:**	13 Sep 2018
Start of test:	13 Sep 2018	**End of test:**	17 Sep 2018

according to paragraph 64 LFGB*

Parameter	Method	Specification / Demands	Result
Sporen aerober Sporenbildner, quantitativ	L+S SOP 9.036		30 CFU / g
Bacillus cereus präsumtiv, quantitativ	*L 00.00 - 33, mod.		< 10 CFU / g DIN EN ISO 7932. mod.
Escherichia coli, qualitative	L+S SOP 9.009		not detected / g
Enterobacteriaceae, quantitative	*L 00.00-133/2, mod.		< 10 CFU / g DIN EN ISO 21528-2
total viable count, aerobic mesophilic 30°C	*L 00.00 - 88/2 mod.		40 CFU / g DIN EN ISO 4833-2. mod.
yeasts, quantitative	*L 01.00 - 37, mod.		< 10 CFU / g ISO 21527. mod.
Salmonella sp., qualitative	*L 00.00 - 20		not detected / 25 g DIN EN ISO 6579-1
molds, quantitative	*L 01.00 - 37, mod.		< 10 CFU / g ISO 21527. mod.

This document was created by a GMP-supervised LIMS and approved by electronic signature.

Approved on 17 Sep 2018 at 14:01 by Franziska Hofmann, Team Manager.

Labor LS SE & Co. KG
Mangelsfeld 4, 5, 6
97708 Bad Bocklet
AG Schweinfurt - HRA 9940

USt.-Id.: DE 317 022 554
EORI-Nr.: DE 924 152 552 472 760

Ärztlicher Leiter:
PD Dr. med. Andreas Schwarzkopf

Hypo Vereinsbank Schweinfurt
Deutsche Bank Würzburg

Pers. haftende Gesellschafterin:
Labor LS SE Verwaltungsgesellschaft
Mangelsfeld 4, 5, 6
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AG Schweinfurt - HRB 7765

IBAN: DE10 7932 0075 0002 0110 00
IBAN: DE08 7907 0016 0840 1325 00

Verwaltungsrat (Vors.):
Dipl. Kfm. Werner Wohnhas
Geschäftsführende Direktoren:
Dr. Frank Böttcher,
Dr. Peter Löprick, Dr. Jürgen Balles

BIC: HYVEDEMM451
BIC: DEUTDEMM790

SGS Germany GmbH Rödingsmarkt 16 20459 Hamburg

BASF Personal Care and Nutrition GmbH
Robert-Hansen-Straße 1
89257 Illertissen

Test Report 3983988
Order No. 4687224
Customer No. 10078225

Mandy Elias
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mandy.elias@sgs.com

Agriculture, Food

SGS Germany GmbH
Rödingsmarkt 16
20459 Hamburg

DAkkS Deutsche Akkreditierungsstelle D-PL-11020-04-01

Hamburg, 19.09.2018

Your order/project: .
Your purchase order number: 4942469521
Your purchase order date: 14.09.2018

General Information:

Sample No.:	180913684
Sample:	rice protein hydrolysate; L 25914 Proben-Nr.: 98524
Date of receipt:	17.09.2018
Testing period (begin / end):	17.09.2018 / 19.09.2018
Quantity:	151g
Packaging:	Plastic can

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
PAH						
Benzo(a)anthracene	SOP M 2920, GC/MS	HH	µg/kg	0,7	0,2	
Chrysene	SOP M 2920, GC/MS	HH	µg/kg	0,8	0,2	
Benzo(b)fluoranthene	SOP M 2920, GC/MS	HH	µg/kg	0,5	0,2	
Benzo(a)pyrene	SOP M 2920, GC/MS	HH	µg/kg	0,2	0,2	
Sum PAH 4 (Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene)		HH	µg/kg	2,2		

The laboratory sites of the SGS group Germany according to the abbreviations mentioned above are listed at http://www.institut-fresenius.de/filestore/89/laborstandortkuerzelsgs2.pdf.

SGS Germany GmbH

Summary of used test methods:

SOP M 2920, GC/MS	12/2016

*** End of test report ***

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BASF Personal Care and Nutrition GmbH
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89251 Illertissen

Person in charge	Ms D. Zarthe	- 2907
Client support	Ms D. Zarthe	- 2907

Report date 28.09.2018

Analytical report: AR-18-JC-171714-01

Sample Code 706-2018-00169217

Reference	Rice protein hydrolysate
Client Sample Code	98524
Client contract reference	Rahmenbestell-Nr. 4942613538
Lot-no.	L25914
Number	1
Amount	616 g
Reception temperature	room temperature
Ordered by	Frau Edith von Kries
Submitted by	Frau Edith von Kries
Reception date time	17.09.2018
Packaging	plastic container with plastic screw closure
Start/end of analyses	19.09.2018 / 28.09.2018

TEST RESULTS

Physical-chemical Analysis

J1001 Sample preparation (#)
Method: §64 LFGB L 00.00-19/1, CON-PV 00001 (2016-06), Digestion (microwave)

J8306 Lead (Pb) (#)
Method: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS
(Modification: incl. ICP-MS/MS, extension of the analysis parameters, extension of the application scope to feed and tabacco/-products)

Lead (Pb)	0.07	mg/kg
	± 0.04	mg/kg

J8308 Cadmium (Cd) (#)
Method: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS
(Modification: incl. ICP-MS/MS, extension of the analysis parameters, extension of the application scope to feed and tabacco/-products)

Cadmium (Cd)	0.2	mg/kg
	± 0.04	mg/kg

J1018 Mercury (Hg) (#)
Method: §64 LFGB L00.00-19/4 (2003-12), mod., CON-PV 00509 (2013-06), CV-AAS
(Modification: extension of the application scope to feed)

Mercury (Hg)	0.013	mg/kg
	± 0.005	mg/kg

J8312 Arsenic (As) (#)
Method: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS
(Modification: incl. ICP-MS/MS, extension of the analysis parameters, extension of the application scope to feed and tabacco/-products)

Arsenic (As)	<0.1	*	mg/kg

J1043 Iron (Fe) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Iron (Fe)	150		mg/kg
	± 30		mg/kg

J1048 Sodium (Na) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Sodium (Na)	14000		mg/kg
	± 2800		mg/kg

J1045 Potassium (K) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Potassium (K)	110		mg/kg
	± 22		mg/kg

J1038 Calcium (Ca) (#)
Method: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modification: extension of the scope of application to food and feed after pressure digestion)

Calcium (Ca)	660		mg/kg
	± 130		mg/kg

EF057 Nitrate
Method: DIN EN ISO 14673-1:2004-05, R04_04ME_v07, Spectrophotometry (CFA)
Subcontracted to a Eurofins laboratory accredited for this test.

Nitrate (as NO3)	116.0		mg/kg

EF058 Nitrite
Method: DIN EN ISO 14673-1:2004-05, R04_04ME_v07, Spectrophotometry (CFA)
Subcontracted to a Eurofins laboratory accredited for this test.

Nitrite (as NO2)	4.1		mg/kg

GFL15 Dioxins and Furans (17 PCDD/F)
Method: Internal, GLS DF 110, GC-MS/MS
Subcontracted to a Eurofins laboratory accredited for this test.

2,3,7,8-TetraCDD	< 0.00378		pg/g
1,2,3,7,8-PentaCDD	< 0.00497		pg/g
1,2,3,4,7,8-HexaCDD	< 0.00755		pg/g
1,2,3,6,7,8-HexaCDD	< 0.0103		pg/g
1,2,3,7,8,9-HexaCDD	< 0.00974		pg/g
1,2,3,4,6,7,8-HeptaCDD	0.0537		pg/g
OctaCDD	0.276		pg/g
2,3,7,8-TetraCDF	0.0108		pg/g
1,2,3,7,8-PentaCDF	< 0.00715		pg/g
2,3,4,7,8-PentaCDF	< 0.0111		pg/g
1,2,3,4,7,8-HexaCDF	< 0.0117		pg/g
1,2,3,6,7,8-HexaCDF	< 0.0107		pg/g
1,2,3,7,8,9-HexaCDF	< 0.00795		pg/g
2,3,4,6,7,8-HexaCDF	< 0.00974		pg/g
1,2,3,4,6,7,8-HeptaCDF	0.0187		pg/g
1,2,3,4,7,8,9-HeptaCDF	< 0.00775		pg/g
OctaCDF	0.0401		pg/g

WHO(2005)-PCDD/F TEQ (lower-bound)		0.00189	pg/g
WHO(2005)-PCDD/F TEQ (medium-bound)		0.0115	pg/g
WHO(2005)-PCDD/F TEQ (upper-bound)		0.0210	pg/g

GFTE1 TEQ-Totals WHO-PCDD/F and PCB

Method: Internal, GLS DF 110, 120, 130, 140, Calculation

Subcontracted to a Eurofins laboratory accredited for this test.

WHO(2005)-PCDD/F+PCB TEQ (lower-bound)		0.0352	pg/g
WHO(2005)-PCDD/F+PCB TEQ (medium-bound)		0.0483	pg/g
WHO(2005)-PCDD/F+PCB TEQ (upper-bound)		0.0615	pg/g

GFL16 polychlorinated biphenyls (12 WHO PCB + 6 ICES PCB)

Method: Internal, GLS DF 110, GC-MS/MS

Subcontracted to a Eurofins laboratory accredited for this test.

PCB 77		3.97	pg/g
PCB 81		0.126	pg/g
PCB 105		15.5	pg/g
PCB 114		0.960	pg/g
PCB 118		30.3	pg/g
PCB 123		0.540	pg/g
PCB 126		0.313	pg/g
PCB 156		3.19	pg/g
PCB 157		0.678	pg/g
PCB 167		1.28	pg/g
PCB 169		< 0.238	pg/g
PCB 189		0.284	pg/g
WHO(2005)-PCB TEQ (lower-bound)		0.0333	pg/g
WHO(2005)-PCB TEQ (medium-bound)		0.0369	pg/g
WHO(2005)-PCB TEQ (upper-bound)		0.0405	pg/g
PCB 28		< 0.0199	ng/g
PCB 52		< 0.0199	ng/g
PCB 101		0.0308	ng/g
PCB 138		0.0321	ng/g
PCB 153		0.0244	ng/g
PCB 180		< 0.0199	ng/g
Total 6 ndl-PCB (lower-bound)		0.0872	ng/g
Total 6 ndl-PCB (medium-bound)		0.117	ng/g
Total 6 ndl-PCB (upper-bound)		0.147	ng/g

SP101 Organochlorine Pesticides and Pyrethroids (GC-ECD)

Method: ASU L 00.00-34:2010-09, DFG-S19, GC-ECD

Subcontracted to a Eurofins laboratory accredited for this test.

Polychloroterpene (Camphechlor)		<0.05	*	mg/kg
Further screened pesticides	Not Detected			

SP104 Organophosphorus Pesticides (GC-FPD)

Method: ASU L 00.00-34:2010-09, DFG-S19, GC-FPD

Subcontracted to a Eurofins laboratory accredited for this test.

Screened pesticides	Not Detected			

Analytical report: AR-18-JC-171714-01
Sample Code 706-2018-00169217

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SP931 Pesticide-Screening Quechers LC-MS/MS
Method: DIN EN 15662:2009-02, mod., P-14.141, LC-MS/MS
(Modification: Salt ratio sorption mixture adjusted)
Subcontracted to a Eurofins laboratory accredited for this test.

Tebuconazole	0.022		mg/kg
Isoprothiolane	0.053		mg/kg
Tricyclazole	0.017		mg/kg
Hexaconazole	0.029		mg/kg
Propiconazole	0.051		mg/kg
Other screened pesticides	Not Detected		

SP111 Organonitrogen Pesticides and others (GC-MS)
Method: ASU L 00.00-34:2010-09, DFG-S19, GC-MS
Subcontracted to a Eurofins laboratory accredited for this test.

Screened pesticides	Not Detected		

A0428 Aflatoxins B1, B2, G1, G2 (Baby food, dietary food) (#)
Method: DIN EN 15851, (2010-07), mod., CON-PV 00855 (2017-06), IAC-LC-FLD
(Modification: sample weight, extraction solvent, enrichment on IAC, no solvent exchange, additional determination of Aflatoxin B2, G1 and G2)

Aflatoxin B1	0.05		µg/kg
	± 0.02		µg/kg
Aflatoxin B2	<0.01	*	µg/kg
Aflatoxin G1	<0.01	*	µg/kg
Aflatoxin G2	<0.01	*	µg/kg
Sum of all positive Aflatoxins	0.05		µg/kg

JJ0FH Ochratoxin A (spices, special matrix) low LOQ (#)
Method: DIN EN 14132, mod., CON-PV 00850 (2017-05), IAC-LC-FLD
(Modification: sample weight, extraction solvent, IAC-volumina and buffer, postcolumn derivatization, extension of the scope to other food and feed)

Ochratoxin A (OTA)	<0.2	*	µg/kg

JJ0FE DON, ZON (#)
Method: Internal, CON-PV 01126 (2018-08), LC-MS/MS

Deoxynivalenol (Vomitoxin)	<20	*	µg/kg
Zearalenone (ZON)	<10	*	µg/kg

JJ0BG Fumonisins (#)
Method: Internal, CON-PV 01085 (2018-08), LC-MS/MS

Fumonisin B1 (FB1)	<20	*	µg/kg
Fumonisin B2 (FB2)	<20	*	µg/kg
Fumonisin sum (B1+B2)	<40	*	µg/kg

* = Below indicated quantification level

(#) = Eurofins WEJ Contaminants GmbH (Hamburg) is accredited for this test.

Result +/- expanded measurement uncertainty (95%; k=2), sampling not included

Signature

Analytical Service Manager (Doris Zarthe)

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

Analytik, Gutachten, Beratung

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BASF Personal Care and Nutrition GmbH
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89257 Illertissen

Report

Date: Oct 1, 2018

Test Report No .:	PB1810741 L
Order Date:	Sep 17, 2018
Order issued:	by client
Test order:	Nutritional analysis
Reference:	4942492098
Sample number:	**318021037-01**
Test item:	Reisproteinhydrolysat
Identification:	Reisproteinhydrolysat Probe: 98524, L 25914 vom 14.09.2018
Packaging:	Plastic bottle
Sample amount:	ca. 100 g
Sampling:	by client
Delivery date:	Sep 17, 2018 by parcel service

Responsible for the report

Public Food Chemist Dieter Lange
Management food

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

TEST RESULTS **Test period: Sep 17, 2018 - 01.10.2018**

Chemical and physical analysis

Water	(ASU L06.00-3:2004-07)$_a$	:	3,6	g/100 g
Fat	(ASU L01.00-20: 1998-05 (Weibull-Stoldt))$_a$	:	4,7	g/100 g
- of which saturated fatty acids	(calculated)	:	2,1	g/100 g
Protein	(ASU L06.00-7: 2007-04)$_a$	:	79,0	g/100 g
Minerals	(ASU L06.00-4: 2007-04)$_a$	:	3,8	g/100 g
Total dietary fiber	(ASU L00.00-18: 1997-01)$_a$	:	5,3	g/100 g
Carbohydrates	(Difference zu 100)	:	3,6	g/100 g
- of which sugars	(calculated)	:	<0,5	g/100 g
Sucrose	(enzymatical)$_a$	:	<0,2	g/100 g
Glucose	(enzymatical)$_a$	:	<0,1	g/100 g
Fructose	(enzymatical)$_a$	:	<0,1	g/100 g
Maltose	(enzymatical)$_a$	:	0,2	g/100 g
Lactose	(ASU L 01.00-17)$_a$	:	<0,1	g/100 g
Energy	(VO(EU) 1169/2011)	:	1.621	kJ/100 g
Energy	(VO(EU) 1169/2011)	:	383	kcal/100 g
Sodium	(DIN EN ISO 11885:2009-09)$_a$	:	1,5	g/100 g
Sodium as salt	(calculated)	:	3,8	g/100 g
Fatty acid spectrum	(ASU L23.04-1 (EG): 2002-12)	:	see annex	

Explanations:
a = accredited method | f=External investigation in accredited laboratory | u = subcontracted | < = below limit of quantification

CHEMISCHES LABOR
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Attachment to the sample 318021037-01

Fatty acid spectrum	**(ASU L23.04-1 (EG): 2002-12)$_a$**	
Caproic acid (C6:0)	%	<0,9
Caprylic acid (C8:0)	%	<0,9
Capric acid (C10:0)	%	<0,9
Lauric acid (C12:0)	%	<0,9
Tridecanoic acid (C13:0)	%	<0,9
Myristic acid (C14:0)	%	1,2
Myristoleic acid C13:1)	%	<0,9
Pentadecanoic acid (C15:0)	%	<0,9
Pentadecenoic acid (C15:1)	%	<0,9
Palmitic acid (C16:0)	%	35,5
Palmitoleic acid (C16:1)	%	<0,9
Heptadecanoic acid (C17:0)	%	<0,9
Heptadecenoic acid (C17:1)	%	<0,9
Stearic acid (C18:0)	%	4,3
Oleic acid (C18:1)	%	48,8
Linoleic acid (C18:2)**	%	6,1
α-Linolenic acid (C18:3n3)*	%	<0,9
γ- Linolenic acid (C18:3n6)**	%	<0,9
Octadecatetraenoic acid (C18:4)	%	<0,9
Nonadecanoic acid (C19:0)	%	<0,9
Arachidic acid (C20:0)	%	1,0
Eicosenoic acid (C20:1)	%	<0,9
Eicosadienic acid (C20:2)**	%	<0,9
Eicosatrienoic acid (C20:3)**	%	<0,9
Eicosatetraenoic acid (C20:4)**	%	<0,9
Eicosapentaenoic acid (C20:5)*	%	<0,9
Heneicosanoic (C21:0)	%	<0,9
Behenic acid (C22:0)	%	1,1
Erucic acid (C22:1n9)	%	<0,9
Cetoleic acid (C22:1n11)	%	<0,9
Docosadienoic acid (C22:2)**	%	<0,9
Docosatetraenoic acid (C22:4)**	%	<0,9
Clupanodonic acid (C22:5)*	%	<0,9
Docosahexaenoic acid (C22:6)*	%	<0,9
Tricosanoic acid (C23:0)	%	<0,9
Lignoceric acid (C24:0)	%	2,2
Tetracosenoic acid (C24:1)	%	<0,9
Pentacosanic acid (C25:0)	%	<0,9
Cerotic acid (C26:0)	%	<0,9
Sum fatty acids		
Saturated fatty acids	%	45,1
Monounsaturated fatty acids	%	48,8
Polyunsaturated fatty acids	%	6,1
Transisomeric fatty acids	%	<0,9
Sum fatty acids in product		
Fat content	g/100 g	4,7
Saturated fatty acids	g/100 g	2,1
Monounsaturated fatty acids	g/100 g	2,3
Polyunsaturated fatty acids	g/100 g	0,3
Fat content calculated	g/100 g	4,5
Transisomeric fatty acids	g/100 g	<0,09

* omega-3-Fettsäuren |** omega-6-Fettsäuren | a = accredited method

Transisomeric fatty acids		
C18:1	%	<0,9
C18:2	%	<0,9
C18:3	%	<0,9

BATCH #4 DATA

BASF
We create chemistry

BASF Personal Care and Nutrition GmbH • D-89251 Illertissen

Analysis Report

26.09.2019

Product PeptAlde
ART 50572136
Lot No. 0020667018

Characteristic Method	Unit	Value	Lower Limit	Upper Limit
BACTERIAL COUNT AEROBIC, MESOPHIL MB-002035	[cfu/g]	50		5000
E. COLI IN 1 G MB-007032		PASS	NEGATIVE	
COLIFORMS IN 1 G MB-006038		PASS		< = 10 cfu
B. CEREUS PRSUMPTIVE DIN EN ISO 7932	[cfu/g]	20		500
SALMONELLA IN 25 G DIN 10123		PASS	NEGATIVE	
MOLDS AND YEAST MB-002039	[cfu/g]	10		100

Production date : 04.04.2019
Best Before date : 03.04.2021

Illertissen, 26.09.2019

BASF Personal Care and Nutrition GmbH
89257 Illertissen, Germany

i.A. M. Kapitzke

QC, Head of laboratory

i.V. J. Dremel

Head of Quality Site Illertissen

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Vorsitzender des Aufsichtsrats
Hans Oberschulte

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Frau Edith von Kries
Postfach 10 63
89251 Illertissen

Sachbearbeiter	Ms D. Zarthe	- 2907
Kundenbetreuer	Ms D. Zarthe	- 2907

Prüfberichtsdatum 17.04.2019

Prüfbericht: AR-19-JC-075814-01

Proben - Nr. 706-2019-00069902

Betrifft	Reisproteinhydrolysatpulver (STAM/max)
Probennummer Kunde	Material 50572136
Kundenreferenznummer	Rahmenbestell-Nr. 4942613538
Lot/Los-Nr.	Charge 0020667018
Anzahl Probenbehälter	1
Bruttogewicht /-volumen	285 g
Eingangstemperatur	Raumtemperatur
Auftraggeber	Frau Edith von Kries
Einsender	Frau Edith von Kries
Überbringer	DHL
Eingangsdatum	09.04.2019
Verpackung	Kunststoffbehältnis mit Kunststoffverschluss, geschraubt
Beginn/Ende der Untersuchungen	09.04.2019 / 16.04.2019

PRÜFERGEBNIS

Physikalisch-chemische Untersuchung

DI004 Gesamtanalyse Aminosäuren (saure Hydrolyse)

Methode: EU 152/2009 (F), ISO 13903:2005, AMSUR, IC-UV

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Alanin	4,61	g/100 g
	± 0,646	g/100 g
Asparaginsäure	7,12	g/100 g
	± 0,997	g/100 g
Gesamtarginin	6,43	g/100 g
	± 0,901	g/100 g
Glutaminsäure	14,9	g/100 g
	± 2,09	g/100 g
Glycin	3,86	g/100 g
	± 0,541	g/100 g
Histidin	1,85	g/100 g
	± 0,260	g/100 g
Isoleucin	3,33	g/100 g
	± 0,466	g/100 g
Leucin	6,75	g/100 g
	± 0,946	g/100 g

Lysin	2,60		g/100 g
	± 0,364		g/100 g
Phenylalanin	4,48		g/100 g
	± 0,627		g/100 g
Prolin	3,74		g/100 g
	± 0,524		g/100 g
Serin	4,17		g/100 g
	± 0,584		g/100 g
Tyrosin	4,36		g/100 g
	± 0,610		g/100 g
Valin	4,94		g/100 g
	± 0,692		g/100 g
Threonin	2,95		g/100 g
	± 0,413		g/100 g
Hydroxyprolin	<0.05	*	g/100 g
Ornithin	<0.05	*	g/100 g

J1001 Druckaufschluss (#)
Methode: §64 LFGB L 00.00-19/1, CON-PV 00001 (2019-03), Mikrowellenaufschluss

J8306 Blei (Pb) (#)
Methode: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS (Modifikation: inkl. ICP-MS/MS, Erweiterung der Analysenparameter, Erweiterung des Anwendungsbereiches auf Futtermittel und Tabak/-erzeugnisse)

Blei [Pb]	0,11		mg/kg
	± 0,05		mg/kg

J8308 Cadmium (Cd) (#)
Methode: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS (Modifikation: inkl. ICP-MS/MS, Erweiterung der Analysenparameter, Erweiterung des Anwendungsbereiches auf Futtermittel und Tabak/-erzeugnisse)

Cadmium [Cd]	0,02		mg/kg
	± 0,01		mg/kg

J1018 Quecksilber (Hg) (#)
Methode: §64 LFGB L00.00-19/4 (2003-12), mod., CON-PV 00509 (2019-02), Kaltdampf-AAS (Modifikation: Erweiterung des Anwendungsbereiches auf Futtermittel)

Quecksilber [Hg]	0,006		mg/kg
	± 0,004		mg/kg

J8312 Arsen (As) (#)
Methode: DIN EN 15763:2010 (2010-04), mod., CON-PV 01274 (2017-12), ICP-MS (Modifikation: inkl. ICP-MS/MS, Erweiterung der Analysenparameter, Erweiterung des Anwendungsbereiches auf Futtermittel und Tabak/-erzeugnisse)

Arsen [As]	<0,1	*	mg/kg

J1043 Eisen (Fe) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES (Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Eisen [Fe]	35		mg/kg
	± 7,0		mg/kg

J1048 Natrium (Na) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES (Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Natrium [Na]	19000		mg/kg
	± 3800		mg/kg

J1045 Kalium (K) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Kalium [K]	110	mg/kg
	± 22	mg/kg

J1038 Calcium (Ca) (#)
Methode: DIN EN ISO 11885, mod., CON-PV 00006 (2017-08), ICP-OES
(Modifikation: Erweiterung des Anwendungsbereiches auf Lebensmittel und Futtermittel nach Druckaufschluß)

Calcium [Ca]	400	mg/kg
	± 80	mg/kg

GFL05 Dioxine und Furane (17 PCDD/F)
Methode: Interne Methode, GLS DF 110:2019-01-25, GC-MS/MS
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

2,3,7,8-TetraCDD	< 0,0124	pg/g
1,2,3,7,8-PentaCDD	< 0,0163	pg/g
1,2,3,4,7,8-HexaCDD	< 0,0248	pg/g
1,2,3,6,7,8-HexaCDD	< 0,0339	pg/g
1,2,3,7,8,9-HexaCDD	< 0,0320	pg/g
1,2,3,4,6,7,8-HeptaCDD	0,0974	pg/g
OctaCDD	< 0,379	pg/g
2,3,7,8-TetraCDF	< 0,0339	pg/g
1,2,3,7,8-PentaCDF	< 0,0235	pg/g
2,3,4,7,8-PentaCDF	< 0,0366	pg/g
1,2,3,4,7,8-HexaCDF	< 0,0385	pg/g
1,2,3,6,7,8-HexaCDF	< 0,0352	pg/g
1,2,3,7,8,9-HexaCDF	< 0,0261	pg/g
2,3,4,6,7,8-HexaCDF	< 0,0320	pg/g
1,2,3,4,6,7,8-HeptaCDF	< 0,0366	pg/g
1,2,3,4,7,8,9-HeptaCDF	< 0,0255	pg/g
OctaCDF	< 0,0783	pg/g
WHO(2005)-PCDD/F TEQ exkl. BG	0,000974	pg/g
WHO(2005)-PCDD/F TEQ inkl. 1/2 BG	0,0344	pg/g
WHO(2005)-PCDD/F TEQ inkl. BG	0,0678	pg/g

GFL11 Polychlorierte Biphenyle (12 WHO PCB + 6 ICES PCB)
Methode: Interne Methode, GLS DF 110:2019-01-25, GC-MS/MS
Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

PCB 77	3,26	pg/g
PCB 81	< 0,176	pg/g
PCB 105	3,22	pg/g
PCB 114	0,367	pg/g
PCB 118	< 9,14	pg/g
PCB 123	< 0,261	pg/g
PCB 126	< 0,163	pg/g
PCB 156	< 1,44	pg/g
PCB 157	< 0,268	pg/g
PCB 167	< 0,718	pg/g
PCB 169	< 0,783	pg/g
PCB 189	< 0,261	pg/g
WHO(2005)-PCB TEQ exkl. BG	0,000433	pg/g
WHO(2005)-PCB TEQ inkl. 1/2 BG	0,0205	pg/g
WHO(2005)-PCB TEQ inkl. BG	0,0407	pg/g

PCB 28	< 0,0653		ng/g
PCB 52	< 0,0653		ng/g
PCB 101	< 0,0653		ng/g
PCB 138	< 0,0653		ng/g
PCB 153	< 0,0653		ng/g
PCB 180	< 0,0653		ng/g
Summe 6 ndl-PCB exkl. BG	ND		ng/g
Summe 6 ndl-PCB inkl. 1/2 BG	0,196		ng/g
Summe 6 ndl-PCB inkl. BG	0,392		ng/g

GFTE1 TEQ-Summe der WHO-PCDD/F und PCB

Methode: Interne Methode, GLS DF 110, 120, 130, 140, Berechnung

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

WHO(2005)-PCDD/F+PCB TEQ exkl. BG	0,00141		pg/g
WHO(2005)-PCDD/F+PCB TEQ inkl. 1/2 BG	0,0549		pg/g
WHO(2005)-PCDD/F+PCB TEQ inkl. BG	0,108		pg/g

SP101 Organochlorpestizide und Pyrethroide (GC-ECD)

Methode: ASU L 00.00-34:2010-09, DFG-S19, GC-ECD

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Gesuchte Pestizide	Nicht nachweisbar

SP104 Organophosphorpestizide (GC-FPD)

Methode: ASU L 00.00-34:2010-09, DFG-S19, GC-FPD

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Gesuchte Pestizide	Nicht nachweisbar

SP111 Organostickstoffpestizide und weitere (GC-MS)

Methode: ASU L 00.00-34:2010-09, DFG-S19, GC-MS

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Gesuchte Pestizide	Nicht nachweisbar

ZP931 Pestizidscreening Quechers LC-MS/MS

Methode: DIN EN 15662:2009-02, mod., P-14.141, LC-MS/MS

Unterauftragsvergabe an ein für diesen Test akkreditiertes Eurofins Labor.

Gesuchte Pestizide	Nicht nachweisbar

JJ006 Aflatoxine B1, B2, G1, G2 (Lebensmittel) (#)

Methode: DIN EN 14123, mod., CON-PV 00873 (2018-08), IAC-LC-FLD
(Modifikation: Probeneinwaage, Extraktionslösung, IAS-Volumen und Puffer, Erweiterung des Anwendungsbereichs auf weitere Lebensmittel und Futtermittel)

Aflatoxin B1	<0,1	*	µg/kg
Aflatoxin B2	<0,1	*	µg/kg
Aflatoxin G1	<0,1	*	µg/kg
Aflatoxin G2	<0,1	*	µg/kg
Summe der bestimmten Aflatoxine	<0,4	*	µg/kg

A7126 Ochratoxin A (Lebensmittel) (#)

Methode: DIN EN 14132 (2009-09), mod., CON-PV 00850 (2018-11), IAC-LC-FLD
(Modifikation: Extraktionslösung, IAS-Volumen, Nachsäulenderivatisierung, Erweiterung des Anwendungsbereichs auf weitere Lebensmittel und Futtermittel)

Ochratoxin A (OTA)	0,9		µg/kg
	± 0,4		µg/kg

JJ0FE Fusarientoxine klein (DON , ZON, T2, HT2) (#)

Methode: Interne Methode, CON-PV 00854 (2018-08), LC-MS/MS

Deoxynivalenol (Vomitoxin)	81		µg/kg
	± 32		µg/kg
Zearalenon (ZON)	<10	*	µg/kg
T-2 Toxin	<10	*	µg/kg
HT-2 Toxin	<10	*	µg/kg
Summe T-2 HT-2 Toxin	<20	*	µg/kg

Prüfbericht: AR-19-JC-075814-01
Proben-Nr. 706-2019-00069902

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JJ0BG Fumonisine (#)

Methode: Interne Methode, CON-PV 01085 (2018-08), LC-MS/MS

Fumonisin B1 (FB1)	<20	*	µg/kg
Fumonisin B2 (FB2)	<20	*	µg/kg
Fumonisine (Summe B1+B2)	<40	*	µg/kg

* = Der angegebene Wert entspricht der Bestimmungsgrenze

(#) = Eurofins WEJ Contaminants GmbH (Hamburg) ist für diesen Test akkreditiert.

Ergebnis +/- erweiterte Messunsicherheit (95%; k=2), Probenahme nicht eingeschlossen

Unterschrift

Analytical Service Manager (Doris Zarthe)

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

Analytik, Gutachten, Beratung

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Robert- Hansen- Str. 1
89257 Illertissen

DAkkS
Deutsche
Akkreditierungsstelle
D-PL-14001-01-00

Report

Date: May 7, 2019

Test Report No .:	PB1904553 L (updated Version, Date: May 15, 2020)
Order Date:	Apr 11, 2019
Order issued:	by client
Test order:	Nutritional analysis
Sample number:	**319007116-01**
Test item:	Rice protein hydrolysate
Identification:	Rice protein hydrolysat Material 50572136 Charge: 0020667018 (STAM/max)
Packaging:	Plastic bottle
Sample amount:	ca. 200 g
Sampling:	by client
Delivery date:	Apr 11, 2019 by parcel service

Responsible for the report

Certified Dipl. Foo fan Witte
Head of Food Analysis

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

TEST RESULTS **Test period: Apr 11, 2019 - May 7, 2019**

Chemical and physical analysis

Water	(ASU L06.00-3:2004-07)$_a$	:	1,8	g/100 g
Fat	(ASU L17.00-4:2002-12 (Weibull-Stoldt))$_a$	:	5,9	g/100 g
- of which saturated fatty acids	(calculated)	:	1,5	g/100 g
Protein	(ASU L06.00-7: 2007-04)$_a$	:	81,3	g/100 g
Minerals	(ASU L06.00-4: 2007-04)$_a$	:	4,8	g/100 g
Total dietary fiber	(ASU L00.00-18: 1997-01)$_a$	:	10,5	g/100 g
Carbohydrates	(Difference to 100)	:	<1	g/100 g
- of which sugars	(calculated)	:	<0,7	g/100 g
Sucrose	(enzymatic)$_a$	:	<0,2	g/100 g
Glucose	(enzymatic)$_a$	:	<0,1	g/100 g
Fructose	(enzymatic)$_a$	:	<0,1	g/100 g
Maltose	(enzymatic)$_a$	:	<0,1	g/100 g
Lactose	(ASU L 01.00-17)$_a$	:	<0,2	g/100 g
Energy	(VO(EU) 1169/2011)	:	1684	kJ/100 g
Energy	(VO(EU) 1169/2011)	:	399	kcal/100 g
Sodium	(DIN EN ISO 11885:2009-09)$_a$	:	1,73	g/100 g
Sodium as salt	(calculated)	:	4,33	g/100 g
Fatty acid spectrum	(ASU L23.04-1 (EG): 2002-12)	:	Attachement	

Explanations:
a = accredited method | f=External investigation in accredited laboratory | u = subcontracted | < = below limit of quantification

CHEMISCHES LABOR
DR. WIRTS + PARTNER
SACHVERSTÄNDIGEN GMBH

Attachment to the sample 319007116-01

Fatty acid spectrum	**(ASU L23.04-1 (EG): 2002-12)**	
Caproic acid (C6:0)	%	<0,1
Caprylic acid (C8:0)	%	<0,1
Capric acid (C10:0)	%	<0,1
Lauric acid (C12:0)	%	<0,1
Tridecanoic acid (C13:0)	%	<0,1
Myristic acid (C14:0)	%	0,7
Myristoleic acid C13:1)	%	<0,1
Pentadecanoic acid (C15:0)	%	<0,1
Pentadecenoic acid (C15:1)	%	<0,1
Palmitic acid (C16:0)	%	22,4
Palmitoleic acid (C16:1)	%	0,1
Heptadecanoic acid (C17:0)	%	<0,1
Heptadecenoic acid (C17:1)	%	<0,1
Stearic acid (C18:0)	%	2,4
Oleic acid (C18:1)	%	29,6
Linoleic acid (C18:2)**	%	40,6
α-Linolenic acid (C18:3n3)*	%	1,0
γ- Linolenic acid (C18:3n6)**	%	<0,1
Octadecatetraenoic acid (C18:4)	%	<0,1
Nonadecanoic acid (C19:0)	%	<0,1
Arachidic acid (C20:0)	%	0,6
Eicosenoic acid (C20:1)	%	0,4
Eicosadienic acid (C20:2)**	%	<0,1
Eicosatrienoic acid (C20:3)**	%	<0,1
Eicosatetraenoic acid (C20:4)**	%	<0,1
Eicosapentaenoic acid (C20:5)*	%	<0,1
Heneicosanoic (C21:0)	%	<0,1
Behenic acid (C22:0)	%	0,4
Erucic acid (C22:1n9)	%	<0,1
Cetoleic acid (C22:1n11)	%	<0,1
Docosadienoic acid (C22:2)**	%	0,2
Docosatetraenoic acid (C22:4)**	%	<0,1
Clupanodonic acid (C22:5)*	%	<0,1
Docosahexaenoic acid (C22:6)*	%	<0,1
Tricosanoic acid (C23:0)	%	<0,1
Lignoceric acid (C24:0)	%	0,7
Tetracosenoic acid (C24:1)	%	<0,1
Pentacosanic acid (C25:0)	%	<0,1
Cerotic acid (C26:0)	%	0,2
Trans isomeric fatty acids		
C18:1	%	0,3
C18:2	%	0,5
C18:3	%	<0,1
Sum of fatty acids		
Saturated fatty acids	%	27,4
Monounsaturated fatty acids	%	30,1
Polyunsaturated fatty acids	%	41,7
Transisomeric fatty acids	%	0,8
Sum of fatty acids in product		
Fat content	g/100 g	5,9
Saturated fatty acids	g/100 g	1,5
Monounsaturated fatty acids	g/100 g	1,7
Polyunsaturated fatty acids	g/100 g	2,3
Fat content calculated	g/100 g	5,6
Transisomeric fatty acids	g/100 g	0,046

* omega-3-fatty acids |** omega-6-fatty acids | a = accredited method

Appendix C. NHANES food codes representative of the intended uses of PeptAIde™ and the existing GRAS uses of rice protein concentrate used in the analysis

Table C-1. NHANES food codes representative of the intended uses of PeptAIde™ used in the analysis

Food code	Food description
Sports nutrition	
Protein bars	
53720100	Nutrition bar (Balance Original Bar)
53720200	Nutrition bar (Clif Bar)
53720210	Nutrition bar (Clif Kids Organic Zbar)
53720300	Nutrition bar (PowerBar)
53720400	Nutrition bar (Slim Fast Original Meal Bar)
53720500	Nutrition bar (Snickers Marathon Protein Bar)
53720600	Nutrition bar (South Beach Living Meal Bar)
53720610	Nutrition bar (South Beach Living High Protein Bar)
53720700	Nutrition bar (Tiger's Milk)
53720800	Nutrition bar (Zone Perfect Classic Crunch)
53729000	Nutrition bar or meal replacement bar, NFS
Protein drink powders (including protein component in fortified smoothies and high protein drinks) and protein squeezes	
11553120	Fruit smoothie, with whole fruit and dairy, added protein*
64134020	Fruit smoothie, with whole fruit, no dairy, added protein*
78101110	Fruit and vegetable smoothie, added protein*
95201200	Nutritional powder mix (EAS Whey Protein Powder)
95201300	Nutritional powder mix (EAS Soy Protein Powder)
95201500	Nutritional powder mix, high protein (Herbalife)
95201600	Nutritional powder mix (Isopure)
95201700	Nutritional powder mix (Kellogg's Special K20 Protein Water)
95202000	Nutritional powder mix (Muscle Milk)
95210020	Nutritional powder mix, high protein (Slim Fast)
95220010	Nutritional powder mix, high protein, NFS
95230000	Nutritional powder mix, whey based, NFS
95230010	Nutritional powder mix, protein, soy based, NFS
95230020	Nutritional powder mix, protein, light, NFS
95230030	Nutritional powder mix, protein, NFS
Baked goods and baking mixes	
Bread, rolls	
13210110	Pudding, bread*
13210180	Pudding, Mexican bread*
14640000	Cheese sandwich, NFS*
14640002	Cheese sandwich, American cheese, on white bread, no spread*
14640004	Cheese sandwich, American cheese, on wheat bread, no spread*
14640006	Cheese sandwich, American cheese, on whole wheat bread, no spread*
14640008	Cheese sandwich, Cheddar cheese, on white bread, no spread*

Food code	Food description
14640010	Cheese sandwich, Cheddar cheese, on wheat bread, no spread*
14640012	Cheese sandwich, Cheddar cheese, on whole wheat bread, no spread*
14640014	Cheese sandwich, reduced fat American cheese, on white bread, no spread*
14640018	Cheese sandwich, reduced fat American cheese, on whole wheat bread, no spread*
14640024	Cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread, no spread*
14640026	Cheese sandwich, American cheese, on white bread, with mayonnaise*
14640028	Cheese sandwich, American cheese, on wheat bread, with mayonnaise*
14640030	Cheese sandwich, American cheese, on whole wheat bread, with mayonnaise*
14640032	Cheese sandwich, Cheddar cheese, on white bread, with mayonnaise*
14640034	Cheese sandwich, Cheddar cheese, on wheat bread, with mayonnaise*
14640036	Cheese sandwich, Cheddar cheese, on whole wheat bread, with mayonnaise*
14640046	Cheese sandwich, reduced fat Cheddar cheese, on wheat bread, with mayonnaise*
14640048	Cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread, with mayonnaise*
14640050	Cheese sandwich, American cheese, on white bread, with butter*
14640054	Cheese sandwich, American cheese, on whole wheat bread, with butter*
14640056	Cheese sandwich, Cheddar cheese, on white bread, with butter*
14640060	Cheese sandwich, Cheddar cheese, on whole wheat bread, with butter*
14640062	Cheese sandwich, reduced fat American cheese, on white bread, with butter*
14640100	Grilled cheese sandwich, NFS*
14640105	Grilled cheese sandwich, American cheese, on white bread*
14640110	Grilled cheese sandwich, American cheese, on wheat bread*
14640115	Grilled cheese sandwich, American cheese, on whole wheat bread*
14640125	Grilled cheese sandwich, Cheddar cheese, on white bread*
14640130	Grilled cheese sandwich, Cheddar cheese, on wheat bread*
14640135	Grilled cheese sandwich, Cheddar cheese, on whole wheat bread*
14640155	Grilled cheese sandwich, reduced fat American cheese, on white bread*
14640165	Grilled cheese sandwich, reduced fat American cheese, on whole wheat bread*
14640185	Grilled cheese sandwich, reduced fat Cheddar cheese, on white bread*
14640190	Grilled cheese sandwich, reduced fat Cheddar cheese, on wheat bread*
14640195	Grilled cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread*
27214100	Meat loaf made with beef*
27214110	Meat loaf made with beef, with tomato-based sauce*
27220050	Ham or pork with stuffing*
27235000	Meat loaf made with venison/deer*
27246500	Meat loaf made with chicken or turkey*
27246505	Meat loaf made with chicken or turkey, with tomato-based sauce*
27250080	Salmon loaf*
27250250	Flounder with crab stuffing*
27250450	Shrimp toast, fried*
27260010	Meat loaf, NS as to type of meat*
27260080	Meat loaf made with beef and pork*
27260090	Meat loaf made with beef, veal and pork*
27260100	Meat loaf made with beef and pork, with tomato-based sauce*
27347210	Chicken or turkey,stuffing, and vegetables excluding carrots, broccoli, and dark green leafy; no sauce*
27351020	Codfish salad, Puerto Rican style (Gazpacho de bacalao)*
27500050	Sandwich, NFS*
27510110	Beef barbecue sandwich or Sloppy Joe, on bun*

Food code	Food description
27510140	Cheeseburger, 1 miniature patty, plain, on miniature bun, from fast food / restaurant*
27510145	Cheeseburger, 1 miniature patty, with condiments, on miniature bun, from fast food / restaurant*
27510150	Cheeseburger, 1 miniature patty, on miniature bun, from school*
27510160	Cheeseburger, 1 small patty, plain, on bun, from fast food / restaurant*
27510165	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant*
27510170	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Burger King Cheeseburger)*
27510171	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Burger King WHOPPER Jr. with cheese)*
27510172	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (McDonald's Cheeseburger)*
27510173	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Wendy's Kid's Cheeseburger)*
27510174	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Wendy's Jr. Cheeseburger)*
27510175	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Wendy's Jr. Cheeseburger Deluxe)*
27510190	Cheeseburger on bun, from school*
27510195	Cheeseburger, 1 small patty, plain, on white bun*
27510205	Cheeseburger, 1 small patty, with condiments, on white bun*
27510206	Cheeseburger, 1 small patty, with condiments, on wheat bun*
27510207	Cheeseburger, 1 small patty, with condiments, on whole wheat bun*
27510210	Cheeseburger, plain, on bun*
27510215	Cheeseburger, 1 medium patty, plain, on bun, from fast food / restaurant*
27510220	Cheeseburger, with mayonnaise or salad dressing, on bun*
27510225	Cheeseburger, 1 medium patty, with condiments, on bun, from fast food / restaurant*
27510230	Cheeseburger, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510231	Cheeseburger, 1 medium patty, with condiments, on bun, from fast food / restaurant (Burger King WHOPPER with cheese)*
27510232	Cheeseburger, 1 medium patty, with condiments, on bun, from fast food / restaurant (McDonald's Quarter Pounder with cheese)*
27510233	Cheeseburger, 1 medium patty, with condiments, on bun, from fast food / restaurant (Wendy's 1/4 lb Single with cheese)*
27510235	Cheeseburger submarine sandwich with lettuce, tomato and spread*
27510241	Cheeseburger, 1 medium patty, plain, on white bun*
27510242	Cheeseburger, 1 medium patty, plain, on wheat bun*
27510243	Cheeseburger, 1 medium patty, plain, on whole wheat bun*
27510250	Cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing, on bun*
27510251	Cheeseburger, 1 medium patty, with condiments, on white bun*
27510252	Cheeseburger, 1 medium patty, with condiments, on wheat bun*
27510253	Cheeseburger, 1 medium patty, with condiments, on whole wheat bun*
27510261	Cheeseburger, 1 large patty, plain, on bun, from fast food / restaurant*
27510265	Double cheeseburger, (2 patties, 1 oz each), plain, on miniature bun*
27510266	Cheeseburger, 1 large patty, with condiments, on bun, from fast food / restaurant*
27510276	Bacon cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant*
27510280	Double cheeseburger (2 patties), with mayonnaise or salad dressing, on bun*

Food code	Food description
27510281	Bacon cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Wendy's Jr. Bacon Cheeseburger)*
27510300	Double cheeseburger (2 patties), with mayonnaise or salad dressing, on double-decker bun*
27510305	Bacon cheeseburger, 1 medium patty, plain, on bun, from fast food / restaurant*
27510310	Cheeseburger with tomato and/or catsup, on bun*
27510311	Cheeseburger, 1 oz meat, plain, on miniature bun*
27510312	Bacon cheeseburger, 1 medium patty, with condiments, on bun, from fast food / restaurant*
27510320	Cheeseburger, 1/4 lb meat, with tomato and/or catsup, on bun*
27510330	Double cheeseburger (2 patties), with tomato and/or catsup, on bun*
27510331	Bacon cheeseburger, 1 medium patty, plain, on white bun*
27510340	Double cheeseburger (2 patties), with mayonnaise or salad dressing and tomatoes and/or catsup, on bun*
27510341	Bacon cheeseburger, 1 medium patty, with condiments, on white bun*
27510342	Bacon cheeseburger, 1 medium patty, with condiments, on wheat bun*
27510343	Bacon cheeseburger, 1 medium patty, with condiments, on whole wheat bun*
27510346	Bacon cheeseburger, 1 large patty, with condiments, on bun, from fast food / restaurant*
27510350	Cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510355	Cheeseburger, 1/3 lb meat, with mayonnaise or salad dressing, tomato and/or catsup on bun*
27510359	Cheeseburger, 1/3 lb meat, with mayonnaise or salad dressing, and mushrooms, on bun*
27510360	Bacon cheeseburger, with mayonnaise or salad dressing, tomato and/or catsup, on bun*
27510370	Double cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing, on bun*
27510375	Double cheeseburger (2 patties, 1/4 lb meat each), with tomato and/or catsup, on bun*
27510376	Double cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant*
27510380	Triple cheeseburger (3 patties, 1/4 lb meat each), with mayonnaise or salad dressing and tomatoes and/or catsup, on bun*
27510385	Double bacon cheeseburger (2 patties), with tomato and/or catsup, on bun*
27510386	Double cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant (Burger King Double Cheeseburger)*
27510387	Double cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant (McDonald's Double Cheeseburger)*
27510388	Double cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant (McDonald's McDouble)*
27510389	Double cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant (McDonald's Big Mac)*
27510391	Double cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant (Wendy's Double Stack)*
27510400	Bacon cheeseburger, 1/4 lb meat, with tomato and/or catsup, on bun*
27510401	Double cheeseburger, 2 medium patties, plain, on bun, from fast food / restaurant*
27510406	Double cheeseburger, 2 medium patties, with condiments, on bun, from fast food / restaurant*
27510410	Chiliburger, on bun*

Food code	Food description
27510412	Double cheeseburger, 2 medium patties, with condiments, on bun, from fast food / restaurant (McDonald's Double Quarter Pounder with Cheese)*
27510413	Double cheeseburger, 2 medium patties, with condiments, on bun, from fast food / restaurant (Wendy's 1/2 lb Double with cheese)*
27510425	Double bacon cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing, on bun*
27510430	Double bacon cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510431	Double bacon cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant (Burger King Bacon Double Cheeseburger)*
27510435	Double bacon cheeseburger (2 patties,1/3 lb meat each), with mayonnaise or salad dressing, on bun*
27510440	Bacon cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510445	Bacon cheeseburger, 1/3 lb meat, with tomato and/or catsup, on bun*
27510446	Double bacon cheeseburger, 2 medium patties, plain, on bun, from fast food / restaurant*
27510451	Double bacon cheeseburger, 2 medium patties, with condiments, on bun, from fast food / restaurant*
27510465	Double bacon cheeseburger, 2 medium patties, with condiments, on bun, from fast food / restaurant (Wendy's Baconator)*
27510475	Double bacon cheeseburger, 2 large patties, with condiments, on bun, from fast food / restaurant*
27510480	Cheeseburger (hamburger with cheese sauce), 1/4 lb meat, with grilled onions, on rye bun*
27510486	Triple cheeseburger, 3 medium patties, with condiments, on bun, from fast food / restaurant*
27510500	Hamburger, plain, on bun*
27510501	Hamburger, 1 miniature patty, plain, on miniature bun, from fast food / restaurant*
27510506	Hamburger, 1 miniature patty, with condiments, on miniature bun, from fast food / restaurant*
27510510	Hamburger, with tomato and/or catsup, on bun*
27510511	Hamburger, 1 miniature patty, on miniature bun, from school*
27510520	Hamburger, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510531	Hamburger, 1 small patty, plain, on bun, from fast food / restaurant*
27510536	Hamburger, 1 small patty, with condiments, on bun, from fast food / restaurant*
27510540	Double hamburger (2 patties), with tomato and/or catsup, on bun*
27510551	Hamburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Burger King Hamburger)*
27510552	Hamburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Burger King WHOPPER Jr.)*
27510553	Hamburger, 1 small patty, with condiments, on bun, from fast food / restaurant (McDonald's Hamburger)*
27510555	Hamburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Wendy's Jr. Hamburger)*
27510560	Hamburger, 1/4 lb meat, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510565	Hamburger, on bun, from school*
27510575	Hamburger, 1 small patty, plain, on white bun*

Food code	Food description
27510577	Hamburger, 1 small patty, plain, on whole wheat bun*
27510585	Hamburger, 1 small patty, with condiments, on white bun*
27510587	Hamburger, 1 small patty, with condiments, on whole wheat bun*
27510600	Hamburger, 1 oz meat, plain, on miniature bun*
27510601	Hamburger, 1 medium patty, plain, on bun, from fast food / restaurant*
27510606	Hamburger, 1 medium patty, with condiments, on bun, from fast food / restaurant*
27510615	Hamburger, 1 medium patty, with condiments, on bun, from fast food / restaurant (Burger King WHOPPER)*
27510616	Hamburger, 1 medium patty, with condiments, on bun, from fast food / restaurant (Wendy's 1/4 lb Single)*
27510620	Hamburger, 1/4 lb meat, with tomato and/or catsup, on bun*
27510631	Hamburger, 1 medium patty, plain, on white bun*
27510632	Hamburger, 1 medium patty, plain, on wheat bun*
27510633	Hamburger, 1 medium patty, plain, on whole wheat bun*
27510641	Hamburger, 1 medium patty, with condiments, on white bun*
27510642	Hamburger, 1 medium patty, with condiments, on wheat bun*
27510643	Hamburger, 1 medium patty, with condiments, on whole wheat bun*
27510667	Double hamburger, 2 small patties, with condiments, on bun, from fast food / restaurant*
27510670	Double hamburger (2 patties), with mayonnaise or salad dressing and tomatoes, on bun*
27510671	Double hamburger, 2 medium patties, plain, on bun, from fast food / restaurant*
27510676	Double hamburger, 2 medium patties, with condiments, on bun, from fast food / restaurant*
27510681	Double hamburger, 2 medium patties, with condiments, on bun, from fast food / restaurant (Burger King Double WHOPPER)*
27510682	Double hamburger, 2 medium patties, with condiments, on bun, from fast food / restaurant (Wendy's 1/2 lb Double)*
27510690	Double hamburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing and tomatoes and/or catsup, on double-decker bun*
27510700	Meatball and spaghetti sauce submarine sandwich*
27510705	Chiliburger, with or without cheese, on bun*
27510950	Reuben sandwich, corned beef sandwich with sauerkraut and cheese, with spread*
27511010	Pastrami sandwich*
27513010	Roast beef sandwich*
27513040	Roast beef submarine sandwich, with lettuce, tomato and spread*
27513041	Roast beef submarine sandwich, with cheese, lettuce, tomato and spread*
27513050	Roast beef sandwich with cheese*
27513070	Roast beef submarine sandwich, on roll, au jus*
27515010	Steak sandwich, plain, on roll*
27515020	Steak and cheese submarine sandwich, with lettuce and tomato*
27515030	Steak and cheese sandwich, plain, on roll*
27515040	Steak and cheese submarine sandwich, plain, on roll*
27515050	Fajita-style beef sandwich with cheese, on pita bread, with lettuce and tomato*
27515070	Steak and cheese submarine sandwich, with fried peppers and onions, on roll*
27516010	Gyro sandwich (pita bread, beef, lamb, onion, condiments), with tomato and spread*
27520130	Bacon, chicken, and tomato club sandwich, with lettuce and spread*
27520135	Bacon, chicken, and tomato club sandwich, with cheese, lettuce and spread*
27520150	Bacon, lettuce, and tomato sandwich with spread*

Food code	Food description
27520155	Bacon, lettuce, and tomato submarine sandwich, with spread*
27520156	Bacon, lettuce, tomato, and cheese submarine sandwich, with spread*
27520160	Bacon, chicken, and tomato club sandwich, on multigrain roll with lettuce and spread*
27520165	Bacon, breaded fried chicken fillet, and tomato club with lettuce and spread*
27520166	Bacon, breaded fried chicken fillet, and tomato club sandwich with cheese, lettuce and spread*
27520300	Ham sandwich, with spread*
27520320	Ham and cheese sandwich, with lettuce and spread*
27520330	Ham and egg sandwich*
27520350	Ham and cheese sandwich, with spread, grilled*
27520370	Hot ham and cheese sandwich, on bun*
27520390	Ham and cheese submarine sandwich, with lettuce, tomato and spread*
27520500	Pork sandwich, on white roll, with onions, dill pickles and barbecue sauce*
27520510	Pork barbecue sandwich or Sloppy Joe, on bun*
27540110	Chicken sandwich, with spread*
27540111	Chicken sandwich, with cheese and spread*
27540120	Chicken salad or chicken spread sandwich*
27540130	Chicken barbecue sandwich*
27540140	Chicken fillet, breaded, fried, sandwich*
27540150	Chicken fillet, breaded, fried, sandwich with lettuce, tomato and spread*
27540151	Chicken fillet, breaded, fried, sandwich with cheese, lettuce, tomato and spread*
27540170	Chicken patty sandwich, miniature, with spread*
27540190	Chicken patty sandwich, with lettuce and spread*
27540200	Fajita-style chicken sandwich with cheese, on pita bread, with lettuce and tomato*
27540235	Chicken fillet, broiled, sandwich with lettuce, tomato, and spread*
27540240	Chicken fillet, broiled, sandwich, on whole wheat roll, with lettuce, tomato and spread*
27540250	Chicken fillet, broiled, sandwich with cheese, on whole wheat roll, with lettuce, tomato and non-mayonnaise type spread*
27540270	Chicken fillet, broiled, sandwich, with lettuce, tomato, and non-mayonnaise type spread*
27540280	Chicken fillet, broiled, sandwich with cheese, on bun, with lettuce, tomato and spread*
27540285	Chicken, bacon, and tomato club sandwich, with lettuce and spread*
27540290	Chicken submarine sandwich, with lettuce, tomato and spread*
27540291	Chicken submarine sandwich, with cheese, lettuce, tomato and spread*
27540295	Buffalo chicken submarine sandwich*
27540296	Buffalo chicken submarine sandwich with cheese*
27540350	Turkey submarine sandwich, with cheese, lettuce, tomato and spread*
27540361	Turkey and bacon submarine sandwich, with cheese, lettuce, tomato and spread*
27541000	Turkey, ham, and roast beef club sandwich, with lettuce, tomato and spread*
27541001	Turkey, ham, and roast beef club sandwich with cheese, lettuce, tomato, and spread*
27545000	Turkey or chicken burger, plain, on bun, from fast food / restaurant*
27545010	Turkey or chicken burger, with condiments, on bun, from fast food / restaurant*
27545100	Turkey or chicken burger, plain, on white bun*
27545110	Turkey or chicken burger, plain, on wheat bun*
27545200	Turkey or chicken burger, with condiments, on white bun*
27545210	Turkey or chicken burger, with condiments, on wheat bun*
27545220	Turkey or chicken burger, with condiments, on whole wheat bun*
27550000	Fish sandwich, on bun, with spread*

Food code	Food description
27550100	Fish sandwich, on bun, with cheese and spread*
27550720	Tuna salad sandwich*
27550750	Tuna salad submarine sandwich, with lettuce and tomato*
27550751	Tuna salad submarine sandwich, with cheese, lettuce and tomato*
27560350	Pig in a blanket, frankfurter or hot dog wrapped in dough*
27560500	Pepperoni and salami submarine sandwich, with lettuce, tomato and spread*
27560710	Sausage sandwich*
27560910	Cold cut sumarine sandwich, with cheese, lettuce, tomato and spread*
27564000	Frankfurter or hot dog sandwich, NFS, plain, on white bun*
27564001	Frankfurter or hot dog sandwich, NFS, plain, on wheat bun*
27564002	Frankfurter or hot dog sandwich, NFS, plain, on whole wheat bun*
27564010	Frankfurter or hot dog sandwich, NFS, plain, on white bread*
27564020	Frankfurter or hot dog sandwich, NFS, plain, on wheat bread*
27564030	Frankfurter or hot dog sandwich, NFS, plain, on whole wheat bread*
27564060	Frankfurter or hot dog sandwich, beef, plain, on white bun*
27564061	Frankfurter or hot dog sandwich, beef, plain, on wheat bun*
27564062	Frankfurter or hot dog sandwich, beef, plain, on whole wheat bun*
27564063	Frankfurter or hot dog sandwich, beef, plain, on whole grain white bun*
27564064	Frankfurter or hot dog sandwich, beef, plain, on multigrain bun*
27564070	Frankfurter or hot dog sandwich, beef, plain, on white bread*
27564080	Frankfurter or hot dog sandwich, beef, plain, on wheat bread*
27564090	Frankfurter or hot dog sandwich, beef, plain, on whole wheat bread*
27564100	Frankfurter or hot dog sandwich, beef, plain, on whole grain white bread*
27564110	Frankfurter or hot dog sandwich, beef, plain, on multigrain bread*
27564120	Frankfurter or hot dog sandwich, beef and pork, plain, on white bun*
27564121	Frankfurter or hot dog sandwich, beef and pork, plain, on wheat bun*
27564130	Frankfurter or hot dog sandwich, beef and pork, plain, on white bread*
27564140	Frankfurter or hot dog sandwich, beef and pork, plain, on wheat bread*
27564150	Frankfurter or hot dog sandwich, beef and pork, plain, on whole wheat bread*
27564160	Frankfurter or hot dog sandwich, beef and pork, plain, on whole grain white bread*
27564180	Frankfurter or hot dog sandwich, meat and poultry, plain, on white bun*
27564181	Frankfurter or hot dog sandwich, meat and poultry, plain, on wheat bun*
27564182	Frankfurter or hot dog sandwich, meat and poultry, plain, on whole wheat bun*
27564190	Frankfurter or hot dog sandwich, meat and poultry, plain, on white bread*
27564200	Frankfurter or hot dog sandwich, meat and poultry, plain, on wheat bread*
27564210	Frankfurter or hot dog sandwich, meat and poultry, plain, on whole wheat bread*
27564220	Frankfurter or hot dog sandwich, meat and poultry, plain, on whole grain white bread*
27564230	Frankfurter or hot dog sandwich, meat and poultry, plain, on multigrain bread*
27564240	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on white bun*
27564241	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on wheat bun*
27564242	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole wheat bun*
27564243	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole grain white bun*
27564250	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on white bread*
27564260	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on wheat bread*
27564270	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole wheat bread*
27564280	Frankfurter or hot dog sandwich, chicken and/or turkey, plain, on whole grain white bread*

Food code	Food description
27564300	Frankfurter or hot dog sandwich, reduced fat or light, plain, on white bun*
27564301	Frankfurter or hot dog sandwich, reduced fat or light, plain, on wheat bun*
27564303	Frankfurter or hot dog sandwich, reduced fat or light, plain, on whole grain white bun*
27564310	Frankfurter or hot dog sandwich, reduced fat or light, plain, on white bread*
27564330	Frankfurter or hot dog sandwich, reduced fat or light, plain, on whole wheat bread*
27564360	Frankfurter or hot dog sandwich, fat free, plain, on white bun*
27564361	Frankfurter or hot dog sandwich, fat free, plain, on wheat bun*
27564362	Frankfurter or hot dog sandwich, fat free, plain, on whole wheat bun*
27564364	Frankfurter or hot dog sandwich, fat free, plain, on multigrain bun*
27564370	Frankfurter or hot dog sandwich, fat free, plain, on white bread*
27564420	Frankfurter or hot dog sandwich, meatless, plain, on bun*
27564430	Frankfurter or hot dog sandwich, meatless, plain, on bread*
27564440	Frankfurter or hot dog sandwich, with chili, on white bun*
27564441	Frankfurter or hot dog sandwich, with chili, on wheat bun*
27564442	Frankfurter or hot dog sandwich, with chili, on whole wheat bun*
27564443	Frankfurter or hot dog sandwich, with chili, on whole grain white bun*
27564450	Frankfurter or hot dog sandwich, with chili, on white bread*
27564460	Frankfurter or hot dog sandwich, with chili, on wheat bread*
27564500	Frankfurter or hot dog sandwich, with meatless chili, on white bun*
27564510	Frankfurter or hot dog sandwich, with meatless chili, on white bread*
27570310	Hors d'oeuvres, with spread*
28141050	Chicken patty parmigiana, breaded, with vegetable, diet frozen meal*
28145100	Turkey with gravy, dressing, vegetable and fruit, diet frozen meal*
28145610	Turkey with gravy, dressing, potatoes, vegetable, dessert, frozen meal*
32101500	Egg, Benedict*
32105190	Egg casserole with bread, cheese, milk and meat*
32201000	Fried egg sandwich*
32202000	Egg, cheese, ham, and bacon on bun*
32202034	Egg, cheese, and sausage on bun*
32202035	Egg, extra cheese, and extra sausage, on bun*
32204010	Scrambled egg sandwich*
41901020	Soyburger, meatless, with cheese on bun*
42301015	Peanut butter sandwich, with regular peanut butter, on white bread*
42301020	Peanut butter sandwich, with regular peanut butter, on wheat bread*
42301025	Peanut butter sandwich, with regular peanut butter, on whole wheat bread*
42301115	Peanut butter sandwich, with reduced fat peanut butter, on white bread*
42301125	Peanut butter sandwich, with reduced fat peanut butter, on whole wheat bread*
42302010	Peanut butter and jelly sandwich, NFS*
42302015	Peanut butter and jelly sandwich, with regular peanut butter, regular jelly, on white bread*
42302020	Peanut butter and jelly sandwich, with regular peanut butter, regular jelly, on wheat bread*
42302025	Peanut butter and jelly sandwich, with regular peanut butter, regular jelly, on whole wheat bread*
42302055	Peanut butter and jelly sandwich, with reduced fat peanut butter, regular jelly, on white bread*
42302060	Peanut butter and jelly sandwich, with reduced fat peanut butter, regular jelly, on wheat bread*

Food code	Food description
42302065	Peanut butter and jelly sandwich, with reduced fat peanut butter, regular jelly, on whole wheat bread*
42302105	Peanut butter and jelly sandwich, with regular peanut butter, reduced sugar jelly, on white bread*
42302110	Peanut butter and jelly sandwich, with regular peanut butter, reduced sugar jelly, on wheat bread*
42302115	Peanut butter and jelly sandwich, with regular peanut butter, reduced sugar jelly, on whole wheat bread*
42302155	Peanut butter and jelly sandwich, with reduced fat peanut butter, reduced sugar jelly, on white bread*
42302160	Peanut butter and jelly sandwich, with reduced fat peanut butter, reduced sugar jelly, on wheat bread*
42302165	Peanut butter and jelly sandwich, with reduced fat peanut butter, reduced sugar jelly, on whole wheat bread*
42303100	Peanut butter and jelly sandwich, frozen commercial product without crusts*
51000100	Bread, NS as to major flour
51000110	Bread, NS as to major flour, toasted
51000200	Roll, NS as to major flour
51000300	Roll, hard, NS as to major flour
51101000	Bread, white
51101010	Bread, white, toasted
51102010	Bread, white with whole wheat swirl
51102020	Bread, white with whole wheat swirl, toasted
51105010	Bread, Cuban
51105040	Bread, Cuban, toasted
51107010	Bread, French or Vienna
51107040	Bread, French or Vienna, toasted
51108010	Focaccia, Italian flatbread, plain
51108100	Naan, Indian flatbread
51109010	Bread, Italian, Grecian, Armenian
51109040	Bread, Italian, Grecian, Armenian, toasted
51109100	Bread, pita
51109110	Bread, pita, toasted
51109150	Bread, pita with fruit
51111010	Bread, cheese
51111040	Bread, cheese, toasted
51113010	Bread, cinnamon
51113100	Bread, cinnamon, toasted
51119010	Bread, egg, Challah
51119040	Bread, egg, Challah, toasted
51121010	Bread, garlic
51121015	Garlic bread, NFS
51121025	Garlic bread, from fast food / restaurant
51121035	Garlic bread, from frozen
51121045	Garlic bread, with parmesan cheese, from fast food / restaurant
51121055	Garlic bread, with parmesan cheese, from frozen
51121065	Garlic bread, with melted cheese, from fast food / restaurant
51121075	Garlic bread, with melted cheese, from frozen

Food code	Food description
51122000	Bread, reduced calorie and/or high fiber, white or NFS
51122100	Bread, reduced calorie and/or high fiber, white or NFS, with fruit and/or nuts
51122110	Bread, reduced calorie and/or high fiber, white or NFS, with fruit and/or nuts, toasted
51123010	Bread, high protein
51127010	Bread, potato
51127020	Bread, potato, toasted
51129010	Bread, raisin
51129020	Bread, raisin, toasted
51133010	Bread, sour dough
51133020	Bread, sour dough, toasted
51136000	Bruschetta*
51150000	Roll, white, soft
51153000	Roll, white, hard
51154010	Roll, white, hot dog bun
51154100	Roll, white, hamburger bun
51154510	Roll, diet
51154550	Roll, egg bread
51154600	Roll, cheese
51155000	Roll, French or Vienna
51156500	Roll, garlic
51157000	Roll, white, hoagie, submarine
51158100	Roll, Mexican, bolillo
51159000	Roll, sour dough
51160000	Roll, sweet, no frosting
51161250	Pan Dulce, no topping
51161270	Pan Dulce, with sugar topping*
51161280	Pan Dulce, with raisins and icing*
51182020	Bread stuffing made with egg
51183990	Breadsticks, NFS
51184000	Breadsticks, hard, NFS
51184010	Bread stick, soft
51184020	Bread stick, NS as to hard or soft
51184030	Bread stick, soft, prepared with garlic and parmesan cheese
51184200	Breadsticks, soft, NFS
51184210	Breadsticks, soft, from fast food / restaurant
51184220	Breadsticks, soft, from frozen
51184230	Breadsticks, soft, with parmesan cheese, from fast food / restaurant
51184240	Breadsticks, soft, with parmesan cheese, from frozen
51184250	Breadsticks, soft, topped with melted cheese
51184260	Breadsticks, soft, stuffed with melted cheese
51300050	Bread, whole grain white
51300060	Bread, whole grain white, toasted
51300110	Bread, whole wheat
51300120	Bread, whole wheat, toasted
51300175	Bread, chappatti or roti, wheat
51300185	Bread, paratha, wheat
51300300	Bread, sprouted wheat
51300310	Bread, sprouted wheat, toasted

Food code	Food description
51301010	Bread, wheat or cracked wheat
51301020	Bread, wheat or cracked wheat, toasted
51301510	Bread, wheat or cracked wheat, reduced calorie and/or high fiber
51301520	Bread, wheat or cracked wheat, reduced calorie and/or high fiber, toasted
51301540	Bread, French or Vienna, whole wheat
51301550	Bread, French or Vienna, whole wheat, toasted
51301600	Bread, pita, whole wheat
51301610	Bread, pita, whole wheat, toasted
51301620	Bread, pita, wheat or cracked wheat
51320010	Roll, wheat or cracked wheat
51320060	Roll, wheat or cracked wheat, hot dog bun
51320070	Roll, wheat or cracked wheat, hamburger bun
51320500	Roll, whole wheat
51320550	Roll, whole wheat, hot dog bun
51320560	Roll, whole wheat, hamburger bun
51320700	Roll, whole grain white
51320710	Roll, whole grain white, hot dog bun
51320720	Roll, whole grain white, hamburger bun
51401010	Bread, rye
51401020	Bread, rye, toasted
51401030	Bread, marble rye and pumpernickel
51401040	Bread, marble rye and pumpernickel, toasted
51404010	Bread, pumpernickel
51404020	Bread, pumpernickel, toasted
51407010	Bread, black
51420000	Roll, rye
51421000	Roll, pumpernickel
51501010	Bread, oatmeal
51501020	Bread, oatmeal, toasted
51501040	Bread, oat bran
51501050	Bread, oat bran, toasted
51502010	Roll, oatmeal
51601010	Bread, multigrain, toasted
51601020	Bread, multigrain
51601210	Bread, multigrain, with raisins
51602020	Bread, multigrain, reduced calorie and/or high fiber, toasted
51620000	Roll, multigrain
51620020	Roll, multigrain, hot dog bun
51620030	Roll, multigrain, hamburger bun
51806010	Bread, rice
51806020	Bread, rice, toasted
51808000	Bread, gluten free
51808010	Bread, gluten free, toasted
51808100	Roll, gluten free
52201000	Cornbread, prepared from mix
52204000	Cornbread stuffing
52401000	Bread, Boston Brown
53116650	Cake, Quezadilla, El Salvadorian style

Food code	Food description
53415100	Crisp, apple, apple dessert*
54408485	Pretzels, soft, gluten free*
54408487	Pretzels, soft, gluten free, coated or flavored*
54420200	Multigrain mixture, bread sticks, sesame nuggets, pretzels, rye chips*
55300010	French toast, NFS*
55300020	French toast, plain, from frozen*
55300050	French toast, plain, from fast food / restaurant*
55300060	French toast, from school, NFS*
55301000	French toast, plain*
55301015	French toast, whole grain*
55301020	French toast, whole grain, reduced fat*
55301025	French toast, gluten free*
55301031	French toast sticks, plain, from frozen*
55301048	French toast sticks, from school, NFS*
55301055	French toast sticks, whole grain*
55310100	Fried bread, Puerto Rican style*
58107205	White pizza, cheese, thin crust*
58107212	White pizza, cheese, with vegetables, thin crust*
58107220	White pizza, thin crust*
58107222	White pizza, cheese, with meat, thin crust*
58107230	White pizza, thick crust*
58107232	White pizza, cheese, with meat and vegetables, thin crust*
58109015	Pizza, cheese, whole wheat thin crust*
58109020	Pizza, cheese, whole wheat thick crust*
58109030	Pizza, with meat, whole wheat thin crust*
58109050	Pizza, cheese and vegetables, whole wheat thin crust*
58109100	Pizza, cheese, gluten-free thin crust*
58109120	Pizza, with meat, gluten-free thin crust*
58109130	Pizza, with meat, gluten-free thick crust*
58109140	Pizza, cheese and vegetables, gluten-free thin crust*
58109210	Breakfast pizza with egg*
58127500	Vegetable submarine sandwich, with fat free spread*
58128210	Dressing with oysters*
58128220	Dressing with chicken or turkey and vegetables*
58128250	Dressing with meat and vegetables*
58131100	Ravioli, NS as to filling, no sauce*
58131110	Ravioli, NS as to filling, with tomato sauce*
58131120	Ravioli, NS as to filling, with cream sauce*
58131310	Ravioli, meat-filled, no sauce*
58131320	Ravioli, meat-filled, with tomato sauce or meat sauce*
58131330	Ravioli, meat-filled, with cream sauce*
58162090	Stuffed pepper, with meat*
58201005	Jelly sandwich, regular jelly, on white bread*
58201015	Jelly sandwich, regular jelly, on wheat bread*
58201025	Jelly sandwich, regular jelly, on whole wheat bread*
58201045	Jelly sandwich, reduced sugar jelly, on wheat bread*
75608100	Onion soup, French*
Cookies, high protein nutritionally enhanced products	

Food code	Food description
53201000	Cookie, NFS
53206030	Cookie, chocolate chip, reduced fat
53207020	Cookie, chocolate or fudge, reduced fat
53207050	Cookie, chocolate, with chocolate filling or coating, fat free
53209020	Cookie, chocolate sandwich, reduced fat
53220010	Cookie, fruit-filled bar, fat free
53220040	Cookie, fig bar, fat free
53233040	Cookie, oatmeal, reduced fat, NS as to raisins
53239010	Cookie, shortbread, reduced fat
53243050	Cookie, vanilla sandwich, reduced fat
53247050	Cookie, vanilla wafer, reduced fat
53260030	Cookie, chocolate chip, sugar free
53260200	Cookie, oatmeal, sugar free
53260300	Cookie, sandwich, sugar free
53260400	Cookie, sugar or plain, sugar free
53260500	Cookie, sugar wafer, sugar free
53260600	Cookie, peanut butter, sugar free
53261000	Cookie, gluten free
Beverages and beverage bases	
Non-milk based meal replacements, protein fortified smoothies, high protein drinks	
95120050	Nutritional drink or shake, liquid, soy-based
Breakfast cereals	
Breakfast cereals, ready-to-eat, weighing 20 g or more but less than 43 g per cup; high fiber cereals containing 28 g or more of fiber per 100 g - high protein, nutritionally enhanced cereals	
57000000	Cereal, NFS
57316385	Cereal (General Mills Cheerios Protein)
Dairy product analogues	
Soy/imitation milks	
11320000	Soy milk
11320100	Soy milk, light
11320200	Soy milk, nonfat
11321000	Soy milk, chocolate
11321100	Soy milk, light, chocolate
11321200	Soy milk, nonfat, chocolate
11340000	Imitation milk, non-soy, sweetened
11512030	Hot chocolate / Cocoa, ready to drink, made with non-dairy milk*
11512120	Hot chocolate / Cocoa, ready to drink, made with non-dairy milk and whipped cream*
11513310	Chocolate milk, made from dry mix with non-dairy milk*
11513395	Chocolate milk, made from no sugar added dry mix with non-dairy milk (Nesquik)*
11513750	Chocolate milk, made from syrup with non-dairy milk*
11513805	Chocolate milk, made from light syrup with non-dairy milk*
11514150	Hot chocolate / Cocoa, made with dry mix and non-dairy milk*
11514360	Hot chocolate / Cocoa, made with no sugar added dry mix and non-dairy milk*
11519215	Strawberry milk, non-dairy
56203076	Oatmeal, regular or quick, made with non-dairy milk, fat not added in cooking*
56203077	Oatmeal, regular or quick, made with non-dairy milk, fat added in cooking*

Food code	Food description
56203106	Oatmeal, instant, plain, made with non-dairy milk, fat not added in cooking*
56207027	Cream of wheat, regular or quick, made with non-dairy milk, fat added in cooking*
92101903	Coffee, Latte, with non-dairy milk*
92101906	Coffee, Latte, with non-dairy milk, flavored*
92101923	Frozen coffee drink, with non-dairy milk*
92101960	Coffee, Cafe Mocha, with non-dairy milk*
92101975	Coffee, Cafe Mocha, decaffeinated, with non-dairy milk*
92102020	Frozen mocha coffee drink, with non-dairy milk*
92102050	Frozen mocha coffee drink, with non-dairy milk and whipped cream*
92102502	Coffee, Iced Latte, with non-dairy milk*
92102602	Coffee, Iced Cafe Mocha, with non-dairy milk*
92161002	Coffee, Cappuccino, with non-dairy milk*
Vegetable and nut-based milk analogues	
11350000	Almond milk, sweetened
11350010	Almond milk, sweetened, chocolate
11350020	Almond milk, unsweetened
11350030	Almond milk, unsweetened, chocolate
11360000	Rice milk
11370000	Coconut milk
42401010	Coconut milk, used in cooking
42402010	Coconut cream, canned, sweetened
Grain products and pastas	
Health bars (other than protein bars), grain bars containing fruit and vegetables	
53710400	Cereal or granola bar (General Mills Fiber One Chewy Bar)
53710500	Cereal or granola bar (Kellogg's Nutri-Grain Cereal Bar)
53710502	Cereal or granola bar (Kellogg's Nutri-Grain Yogurt Bar)
53710504	Cereal or granola bar (Kellogg's Nutri-Grain Fruit and Nut Bar)
53710600	Milk 'n Cereal bar
53710700	Cereal or granola bar (Kellogg's Special K bar)
53710800	Cereal or granola bar (Kashi Chewy)
53710802	Cereal or granola bar (Kashi Crunchy)
53710804	Kashi GOLEAN Crunchy Bars
53710806	Kashi TLC Crunchy Granola Bar
53710900	Cereal or granola bar (General Mills Nature Valley Chewy Trail Mix)
53710902	Cereal or granola bar, with yogurt coating (General Mills Nature Valley Chewy Granola Bar)
53710904	Cereal or granola bar (General Mills Nature Valley Sweet and Salty Granola Bar)
53710906	Cereal or granola bar (General Mills Nature Valley Crunchy Granola Bar)
53711000	Cereal or granola bar (Quaker Chewy Granola Bar)
53711002	Cereal or granola bar (Quaker Chewy 90 Calorie Granola Bar)
53711004	Cereal or granola bar (Quaker Chewy 25% Less Sugar Granola Bar)
53711006	Cereal or granola bar (Quaker Chewy Dipps Granola Bar)
53711100	Cereal or granola bar (Quaker Granola Bites)
53712000	Snack bar, oatmeal
53712100	Cereal or Granola bar, NFS
53712200	Cereal or granola bar, lowfat, NFS
53712210	Cereal or granola bar, nonfat
53713100	Cereal or granola bar, peanuts , oats, sugar, wheat germ

Food code	Food description
53714200	Cereal or granola bar, chocolate coated, NFS
53714210	Cereal or granola bar, with coconut, chocolate coated
53714220	Cereal or granola bar with nuts, chocolate coated
53714230	Cereal or granola bar, oats, nuts, coated with non-chocolate coating
53714250	Cereal or granola bar, coated with non-chocolate coating
53714300	Cereal or granola bar, high fiber, coated with non-chocolate yogurt coating
53714400	Cereal or granola bar, with rice cereal
53714500	Breakfast bar, NFS
53714520	Breakfast bar, cereal crust with fruit filling, lowfat
Milk products	
Flavored milk drinks	
11511000	Chocolate milk, NFS
11511100	Chocolate milk, ready to drink, whole
11511200	Chocolate milk, ready to drink, reduced fat
11511300	Chocolate milk, ready to drink, fat free
11511400	Chocolate milk, ready to drink, low fat
11511550	Chocolate milk, ready to drink, reduced sugar, NS as to milk
11511600	Chocolate milk, ready to drink, low fat (Nesquik)
11511610	Chocolate milk, ready to drink, fat free (Nesquik)
11511700	Chocolate milk, ready to drink, low fat, no sugar added (Nesquik)
11512010	Hot chocolate / Cocoa, ready to drink
11512020	Hot chocolate / Cocoa, ready to drink, made with nonfat milk
11512100	Hot chocolate / Cocoa, ready to drink, with whipped cream
11512110	Hot chocolate / Cocoa, ready to drink, made with nonfat milk and whipped cream
11513000	Chocolate milk, made from dry mix, NS as to type of milk
11513100	Chocolate milk, made from dry mix with whole milk
11513150	Chocolate milk, made from dry mix with reduced fat milk
11513200	Chocolate milk, made from dry mix with low fat milk
11513300	Chocolate milk, made from dry mix with fat free milk
11513355	Chocolate milk, made from reduced sugar mix with whole milk
11513360	Chocolate milk, made from reduced sugar mix with reduced fat milk
11513365	Chocolate milk, made from reduced sugar mix with low fat milk
11513380	Chocolate milk, made from dry mix, NS as to type of milk (Nesquik)
11513381	Chocolate milk, made from dry mix with whole milk (Nesquik)
11513382	Chocolate milk, made from dry mix with reduced fat milk (Nesquik)
11513383	Chocolate milk, made from dry mix with low fat milk (Nesquik)
11513384	Chocolate milk, made from dry mix with fat free milk (Nesquik)
11513391	Chocolate milk, made from no sugar added dry mix with whole milk (Nesquik)
11513392	Chocolate milk, made from no sugar added dry mix with reduced fat milk (Nesquik)
11513393	Chocolate milk, made from no sugar added dry mix with low fat milk (Nesquik)
11513394	Chocolate milk, made from no sugar added dry mix with fat free milk (Nesquik)
11513400	Chocolate milk, made from syrup, NS as to type of milk
11513500	Chocolate milk, made from syrup with whole milk
11513550	Chocolate milk, made from syrup with reduced fat milk
11513600	Chocolate milk, made from syrup with low fat milk
11513700	Chocolate milk, made from syrup with fat free milk
11513801	Chocolate milk, made from light syrup with whole milk
11513802	Chocolate milk, made from light syrup with reduced fat milk

Food code	Food description
11513803	Chocolate milk, made from light syrup with low fat milk
11513804	Chocolate milk, made from light syrup with fat free milk
11513851	Chocolate milk, made from sugar free syrup with whole milk
11513853	Chocolate milk, made from sugar free syrup with low fat milk
11514100	Hot chocolate / Cocoa, made with dry mix and water
11514110	Hot chocolate / Cocoa, made with dry mix and whole milk
11514120	Hot chocolate / Cocoa, made with dry mix and reduced fat milk
11514130	Hot chocolate / Cocoa, made with dry mix and low fat milk
11514140	Hot chocolate / Cocoa, made with dry mix and fat free milk
11514310	Hot chocolate / Cocoa, made with no sugar added dry mix and water
11514320	Hot chocolate / Cocoa, made with no sugar added dry mix and whole milk
11514330	Hot chocolate / Cocoa, made with no sugar added dry mix and reduced fat milk
11514340	Hot chocolate / Cocoa, made with no sugar added dry mix and low fat milk
11514350	Hot chocolate / Cocoa, made with no sugar added dry mix and fat free milk
11519040	Strawberry milk, NFS
11519050	Strawberry milk, whole
11519105	Strawberry milk, reduced fat
11519200	Strawberry milk, low fat
11519205	Strawberry milk, fat free
11525000	Milk, malted, natural flavor, made with milk
11526000	Milk, malted
11531000	Eggnog, regular
11531500	Eggnog, lowfat / light
11541110	Milk shake, home recipe, chocolate
11541120	Milk shake, home recipe, flavors other than chocolate
11541130	Milk shake, home recipe, chocolate, light
11541135	Milk shake, home recipe, flavors other than chocolate, light
11541400	Milk shake with malt
11542100	Milk shake, fast food, chocolate
11542200	Milk shake, fast food, flavors other than chocolate
11543000	Milk shake, bottled, chocolate
11543010	Milk shake, bottled, flavors other than chocolate
11560000	Chocolate milk drink
11830100	Hot chocolate / Cocoa, dry mix, not reconstituted**
11830115	Hot chocolate / Cocoa, dry mix, no sugar added, not reconstituted**
11830150	Cocoa powder, not reconstituted**
11830160	Chocolate beverage powder, dry mix, not reconstituted**
11830165	Chocolate beverage powder, reduced sugar, dry mix, not reconstituted**
11830260	Milk, malted, dry mix, not reconstituted**
11830400	Strawberry beverage powder, dry mix, not reconstituted**
Milk-based meal replacements	
95101000	Nutritional drink or shake, ready-to-drink (Boost)
95101010	Nutritional drink or shake, ready-to-drink (Boost Plus)
95102000	Nutritional drink or shake, ready-to-drink (Carnation Instant Breakfast)
95103000	Nutritional drink or shake, ready-to-drink (Ensure)
95103010	Nutritional drink or shake, ready-to-drink (Ensure Plus)
95104000	Nutritional drink or shake, ready-to-drink, sugar free (Glucerna)
95105000	Nutritional drink or shake, ready-to-drink (Kellogg's Special K Protein)

Food code	Food description
95106000	Nutritional drink or shake, ready-to-drink (Muscle Milk)
95106010	Nutritional drink or shake, ready-to-drink, light (Muscle Milk)
95110000	Nutritional drink or shake, ready-to-drink (Slim Fast)
95110010	Nutritional drink or shake, ready-to-drink, sugar free (Slim Fast)
95110020	Nutritional drink or shake, high protein, ready-to-drink (Slim Fast)
95120000	Nutritional drink or shake, ready-to-drink, NFS
95120010	Nutritional drink or shake, high protein, ready-to-drink, NFS
95120020	Nutritional drink or shake, high protein, light, ready-to-drink, NFS
95201000	Nutritional powder mix (Carnation Instant Breakfast)**
95201010	Nutritional powder mix, sugar free (Carnation Instant Breakfast)**
95210000	Nutritional powder mix (Slim Fast)**
95220000	Nutritional powder mix, NFS**
Yogurt	
11400000	Yogurt, NFS
11400010	Yogurt, Greek, NS as to type of milk or flavor
11410000	Yogurt, NS as to type of milk or flavor
11411010	Yogurt, NS as to type of milk, plain
11411100	Yogurt, whole milk, plain
11411200	Yogurt, low fat milk, plain
11411300	Yogurt, nonfat milk, plain
11411390	Yogurt, Greek, NS as to type of milk, plain
11411400	Yogurt, Greek, whole milk, plain
11411410	Yogurt, Greek, low fat milk, plain
11411420	Yogurt, Greek, nonfat milk, plain
11420000	Yogurt, vanilla, NS as to type of milk
11421000	Yogurt, vanilla, whole milk
11422000	Yogurt, vanilla, low fat milk
11422100	Yogurt, vanilla, low fat milk, light
11423000	Yogurt, vanilla, nonfat milk
11424000	Yogurt, vanilla, nonfat milk, light
11424500	Yogurt, Greek, vanilla, whole milk
11424510	Yogurt, Greek, vanilla, low fat
11424520	Yogurt, Greek, vanilla, nonfat
11426000	Yogurt, chocolate, whole milk
11427000	Yogurt, chocolate, nonfat milk
11428000	Yogurt, Greek, chocolate, nonfat
11430000	Yogurt, NS as to type of milk, fruit
11431000	Yogurt, whole milk, fruit
11432000	Yogurt, low fat milk, fruit
11432500	Yogurt, fruit, low fat milk, light
11433000	Yogurt, nonfat milk, fruit
11433500	Yogurt, fruit, nonfat milk, light
11433990	Yogurt, Greek, NS as to type of milk, fruit
11434000	Yogurt, Greek, whole milk, fruit
11434010	Yogurt, Greek, low fat milk, fruit
11434020	Yogurt, Greek, nonfat milk, fruit
11434090	Yogurt, NS as to type of milk, flavors other than fruit
11434100	Yogurt, whole milk, flavors other than fruit

Food code	Food description
11434200	Yogurt, low fat milk, flavors other than fruit
11434300	Yogurt, nonfat milk, flavors other than fruit
11435000	Yogurt, Greek, NS as to type of milk, flavors other than fruit
11435010	Yogurt, Greek, whole milk, flavors other than fruit
11435020	Yogurt, Greek, low fat milk, flavors other than fruit
11435030	Yogurt, Greek, nonfat milk, flavors other than fruit
11435100	Yogurt, Greek, with oats
11436000	Yogurt, liquid
11440010	Chipotle dip, yogurt based*
11440020	Dill dip, yogurt based*
11440040	Ranch dip, yogurt based*
11440050	Spinach dip, yogurt based*
11440060	Tzatziki dip*
11440070	Vegetable dip, yogurt based*
11446000	Yogurt parfait, low fat, with fruit
41420380	Yogurt, soy
42401100	Yogurt, coconut milk
Frozen yogurt	
11459990	Yogurt, frozen, NS as to flavor, NS as to type of milk
11460000	Yogurt, frozen, flavors other than chocolate, NS as to type of milk
11460100	Yogurt, frozen, chocolate, NS as to type of milk
11460160	Yogurt, frozen, chocolate, lowfat milk
11460170	Yogurt, frozen, flavors other than chocolate, lowfat milk
11460200	Yogurt, frozen, chocolate, nonfat milk
11460250	Yogurt, frozen, flavors other than chocolate, with sorbet or sorbet-coated
11460300	Yogurt, frozen, flavors other than chocolate, nonfat milk
11460400	Yogurt, frozen, chocolate, nonfat milk, with low-calorie sweetener
11460410	Yogurt, frozen, flavors other than chocolate, nonfat milk, with low-calorie sweetener
11461000	Yogurt, frozen, chocolate-coated*
11461250	Yogurt, frozen, cone, chocolate*
11461260	Yogurt, frozen, cone, flavors other than chocolate*
11461270	Yogurt, frozen, cone, flavors other than chocolate, lowfat milk*
53366000	Pie, yogurt, frozen*
Plant protein products	
Meat alternatives, imitation meat products	
41440000	Textured vegetable protein, dry
41810200	Bacon strip, meatless
41810400	Breakfast link, pattie, or slice, meatless
41810600	Chicken, meatless, NFS
41810610	Chicken, meatless, breaded, fried
41811400	Frankfurter or hot dog, meatless
41811600	Luncheon slice, meatless-beef, chicken, salami or turkey
41811800	Meatball, meatless
41811890	Vegetarian burger or patty, meatless, no bun
41812000	Sandwich spread, meat substitute type
41812400	Vegetarian pot pie
41812450	Vegetarian chili, made with meat substitute
41812600	Vegetarian, fillet

Food code	Food description
41812800	Vegetarian stew
41812850	Vegetarian stroganoff
41812900	Vegetarian meat loaf
41901020	Soyburger, meatless, with cheese on bun*
59003000	Meat substitute, cereal- and vegetable protein-based, fried
Processed fruits and fruit juices	
Fruit smoothies	
11551050	Licuado or Batido
11553100	Fruit smoothie, NFS
11553110	Fruit smoothie, with whole fruit and dairy
11553120	Fruit smoothie, with whole fruit and dairy, added protein*
11553130	Fruit smoothie juice drink, with dairy
64134015	Fruit smoothie, with whole fruit, no dairy
64134020	Fruit smoothie, with whole fruit, no dairy, added protein*
64134030	Fruit smoothie juice drink, no dairy
64134100	Fruit smoothie, light
64134200	Fruit smoothie, bottled
78101100	Fruit and vegetable smoothie
78101110	Fruit and vegetable smoothie, added protein*
78101120	Fruit and vegetable smoothie, bottled
92610020	Horchata beverage, made with water
92610030	Horchata beverage, made with milk
92611010	Oatmeal beverage with water
92611100	Oatmeal beverage with milk
92613010	Cornmeal beverage
92613510	Cornmeal beverage with chocolate milk
Processed vegetables and vegetable juices	
Vegetable/tomato juice including vegetable smoothies	
73105010	Carrot juice, 100%
74301100	Tomato juice, 100%
74301150	Tomato juice, 100%, low sodium
74302000	Tomato juice cocktail
74303000	Tomato and vegetable juice, 100%
74303100	Tomato and vegetable juice, 100%, low sodium
75132000	Mixed vegetable juice
75132100	Celery juice
Prepared soups, dry soup mixes, and condensed soups	
12350100	Spinach dip*
14710100	Cheddar cheese soup, home recipe, canned or ready-to-serve
14710200	Beer cheese soup, made with milk
27113100	Beef stroganoff*
27113300	Swedish meatballs with cream or white sauce*
27114000	Beef with mushroom sauce*
27115000	Beef with soy-based sauce*
27120150	Pork or ham with soy-based sauce*
27141000	Chicken or turkey cacciatore*
27144000	Chicken or turkey with mushroom sauce*

Food code	Food description
27146160	Chicken with mole sauce*
27150190	Lobster sauce*
27160100	Meatballs, NS as to type of meat, with sauce*
27211190	Beef and potatoes with cream sauce, white sauce or mushroom sauce*
27212350	Beef stroganoff with noodles*
27212400	Beef and noodles with mushroom sauce*
27212500	Beef and noodles with soy-based sauce*
27213120	Porcupine balls with tomato-based sauce*
27213500	Beef and rice with soy-based sauce*
27241010	Chicken or turkey and potatoes with gravy*
27242350	Chicken or turkey tetrazzini*
27242500	Chicken or turkey and noodles with soy-based sauce*
27243300	Chicken or turkey and rice with cream sauce*
27243400	Chicken or turkey and rice with mushroom sauce*
27243600	Chicken or turkey and rice with soy-based sauce*
27250124	Shrimp and noodles with mushroom sauce*
27250128	Shrimp and noodles with soy-based sauce*
27250630	Tuna noodle casserole with mushroom sauce*
27250710	Tuna and rice with mushroom sauce*
27311610	Beef, potatoes, and vegetables including carrots, broccoli, and/or dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27311620	Beef, potatoes, and vegetables excluding carrots, broccoli, and dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27311645	Beef, potatoes, and vegetables including carrots, broccoli, and/or dark-green leafy; soy-based sauce*
27313150	Beef, noodles, and vegetables including carrots, broccoli, and/or dark-green leafy; soy-based sauce*
27313160	Beef, noodles, and vegetables excluding carrots, broccoli, and dark-green leafy; soy-based sauce*
27315320	Beef, rice, and vegetables excluding carrots, broccoli, and dark-green leafy; mushroom sauce*
27315510	Beef, rice, and vegetables including carrots, broccoli, and/or dark-green leafy; soy-based sauce*
27317010	Beef pot pie*
27320320	Pork, rice, and vegetables including carrots, broccoli, and/or dark-green leafy; soy-based sauce*
27320330	Pork, rice, and vegetables excluding carrots, broccoli, and dark-green leafy; soy-based sauce*
27341035	Chicken or turkey, potatoes, and vegetables including carrots, broccoli, and/or dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27341040	Chicken or turkey, potatoes, and vegetables excluding carrots, broccoli, and dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27343470	Chicken or turkey, noodles, and vegetables including carrots, broccoli, and/or dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27343480	Chicken or turkey, noodles, and vegetables excluding carrots, broccoli, and/or dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27345310	Chicken or turkey, rice, and vegetables including carrots, broccoli, and/or dark-green leafy; soy-based sauce*

Food code	Food description
27345320	Chicken or turkey, rice, and vegetables excluding carrots, broccoli, and dark-green leafy; soy-based sauce*
27345410	Chicken or turkey, rice, and vegetables including carrots, broccoli, and/or dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27345420	Chicken or turkey, rice, and vegetables excluding carrots, broccoli, and dark-green leafy; cream sauce, white sauce, or mushroom sauce*
27350070	Tuna pot pie*
27350110	Bouillabaisse*
27360090	Paella, NFS*
27363000	Gumbo with rice*
27414100	Beef with vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, mushroom sauce*
27415100	Beef and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, soy-based sauce*
27415120	Beef, tofu, and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, soy-based sauce*
27415170	Kung Pao beef*
27415200	Beef and vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes, soy-based sauce*
27415220	Beef, tofu, and vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes, soy-based sauce*
27416150	Pepper steak*
27416400	Stir fried beef and vegetables in soy sauce*
27420100	Pork, tofu, and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, soy-base sauce*
27420170	Pork and onions with soy-based sauce*
27420370	Pork, tofu, and vegetables, excluding carrots, broccoli, and dark-green leafy; no potatoes, soy-based sauce*
27420500	Pork and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, soy-based sauce*
27420510	Pork and vegetables excluding carrots, broccoli, and dark- green leafy; no potatoes, soy-based sauce*
27443110	Chicken or turkey a la king with vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, cream, white, or soup-based sauce*
27443120	Chicken or turkey a la king with vegetables excluding carrorts, broccoli, and dark-green leafy; no potatoes, cream, white, or soup-based sauce*
27443150	Chicken or turkey divan*
27445120	Chicken or turkey and vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes, soy-based sauce*
27445180	Moo Goo Gai Pan*
27445250	Almond chicken*
27450410	Shrimp and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, soy-based sauce*
27450420	Shrimp and vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes, soy-based sauce*
27450470	Kung Pao shrimp*
27450600	Shellfish mixture and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, soy-based sauce*

Food code	Food description
27450660	Shellfish mixture and vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes, mushroom sauce*
27450740	Fish and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, soy-based sauce*
27450750	Fish and vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes, soy-based sauce*
27464000	Gumbo, no rice*
27513070	Roast beef submarine sandwich, on roll, au jus*
28110330	Salisbury steak with gravy, whipped potatoes, vegetable, dessert, frozen meal*
28110350	Salisbury steak with gravy, potatoes, vegetable, dessert, frozen meal*
28110380	Salisbury steak with gravy, macaroni and cheese, frozen meal*
28110390	Salisbury steak, potatoes, vegetable, dessert, diet frozen meal*
28110510	Beef, sliced, with gravy, potatoes, vegetable, frozen meal*
28113140	Beef with spaetzle or rice, vegetable, frozen meal*
28140100	Chicken dinner, NFS, frozen meal*
28140320	Chicken and noodles with vegetable, dessert, frozen meal*
28141610	Chicken and vegetables in cream or white sauce, diet frozen meal*
28141650	Chicken and vegetables au gratin with rice, diet frozen entree*
28143170	Chicken in cream sauce with noodles and vegetable, frozen meal*
28145100	Turkey with gravy, dressing, vegetable and fruit, diet frozen meal*
28145610	Turkey with gravy, dressing, potatoes, vegetable, dessert, frozen meal*
28154010	Shrimp and vegetables in sauce with noodles, diet frozen meal*
28310110	Beef, broth, bouillon, or consomme
28310150	Oxtail soup
28310160	Beef broth, with tomato, home recipe
28310170	Beef broth, without tomato, home recipe
28310230	Meatball soup, home recipe, Mexican style
28310330	Pho
28311010	Pepperpot soup
28311020	Menudo soup, home recipe
28311030	Menudo soup, canned, prepared with water or ready-to-serve
28315050	Beef vegetable soup with potato, pasta, or rice, chunky style, canned, or ready-to-serve
28315140	Beef vegetable soup, home recipe, Mexican style
28315150	Meat and corn hominy soup, home recipe, Mexican style
28315160	Italian Wedding Soup
28317010	Beef stroganoff soup, chunky style, home recipe, canned or ready-to-serve
28320130	Ham, rice, and potato soup, Puerto Rican style
28320140	Ham, noodle, and vegetable soup, Puerto Rican style
28320160	Pork vegetable soup with potato, pasta, or rice, stew type, chunky style
28320300	Pork with vegetable excluding carrots, broccoli and/or dark-green leafy; soup, Asian Style
28321130	Bacon soup, cream of, prepared with water
28331110	Lamb, pasta, and vegetable soup, Puerto Rican style
28340110	Chicken or turkey broth, bouillon, or consomme
28340120	Chicken or turkey broth, without tomato, home recipe
28340130	Chicken or turkey broth, with tomato, home recipe
28340150	Mexican style chicken broth soup stock
28340179	Beef broth, less or reduced sodium, canned or ready-to-serve

Food code	Food description
28340180	Chicken or turkey broth, less or reduced sodium, canned or ready-to-serve
28340210	Chicken rice soup, Puerto Rican style
28340220	Chicken soup with noodles and potatoes, Puerto Rican style
28340310	Chicken or turkey gumbo soup, home recipe, canned or ready-to-serve
28340510	Chicken or turkey noodle soup, chunky style, canned or ready-to-serve
28340550	Sweet and sour soup
28340580	Chicken or turkey soup with vegetables, broccoli, carrots, celery, potatoes and onions, Asian style
28340590	Chicken or turkey corn soup with noodles, home recipe
28340600	Chicken or turkey vegetable soup, canned, prepared with water or ready-to-serve
28340610	Chicken or turkey vegetable soup, stew type
28340630	Chicken or turkey vegetable soup with rice, stew type, chunky style
28340640	Chicken or turkey vegetable soup with noodles, stew type, chunky style, canned or ready-to-serve
28340660	Chicken or turkey vegetable soup, home recipe
28340670	Chicken or turkey vegetable soup with rice, home recipe, Mexican style
28340680	Chicken or turkey and corn hominy soup, home recipe, Mexican style
28340690	Chicken or turkey vegetable soup with potato and cheese, chunky style, canned or ready-to-serve
28340700	Bird's nest soup
28340750	Hot and sour soup
28340800	Chicken or turkey soup with vegetables and fruit, Asian Style
28345110	Chicken or turkey soup, cream of, NS as to prepared with milk or water
28345120	Chicken or turkey soup, cream of, prepared with milk
28345130	Chicken or turkey soup, cream of, prepared with water
28345160	Chicken or turkey mushroom soup, cream of, prepared with milk
28345170	Duck soup
28350040	Fish stock, home recipe
28350050	Fish chowder
28350110	Crab soup, NS as to tomato-base or cream style
28350210	Clam chowder, NS as to Manhattan or New England style
28350220	Clam chowder, Manhattan
28351110	Fish and vegetable soup, no potatoes, Mexican style
28351120	Fish soup with potatoes, Mexican style
28351160	Codfish, rice, and vegetable soup, Puerto Rican style
28355110	Clam chowder, New England, NS as to prepared with water or milk
28355120	Clam chowder, New England, prepared with milk
28355130	Clam chowder, New England, prepared with water
28355140	Clam chowder, New England, reduced sodium, canned or ready-to-serve
28355210	Crab soup, cream of, prepared with milk
28355250	Lobster bisque
28355260	Lobster gumbo*
28355310	Oyster stew
28355410	Shrimp soup, cream of, NS as to prepared with milk or water
28355420	Shrimp soup, cream of, prepared with milk
28355430	Shrimp soup, cream of, prepared with water
28355440	Shrimp gumbo*

Food code	Food description
28355450	Seafood soup with potatoes and vegetables including carrots, broccoli, and/or dark-green leafy
28355460	Seafood soup with potatoes, and vegetables excluding carrots, broccoli, and dark-green leafy
28355470	Seafood soup with vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes
28355480	Seafood soup with vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes
28500070	Gravy, beef or meat, home recipe*
28500080	Gravy, poultry, home recipe*
28520000	Gravy or sauce, made with soy sauce, stock or bouillon, cornstarch*
28522000	Mole poblano sauce*
28522050	Mole verde sauce*
32300100	Egg drop soup
41601010	Bean soup, NFS
41601020	Bean with bacon or ham soup, canned or ready-to-serve
41601030	Black bean soup, home recipe, canned or ready-to-serve
41601040	Lima bean soup, home recipe, canned or ready-to-serve
41601070	Soybean soup, miso broth
41601090	Bean soup, with macaroni, home recipe, canned, or ready-to-serve
41601110	Bean and ham soup, chunky style, canned or ready-to-serve
41601130	Bean soup, mixed beans, home recipe, canned or ready-to-serve
41601140	Bean soup, home recipe
41601180	Bean and ham soup, home recipe
41601200	Liquid from stewed kidney beans, Puerto Rican style
41602020	Garbanzo bean or chickpea soup, home recipe, canned or ready-to-serve
41602030	Split pea and ham soup
41602050	Split pea soup
41602070	Split pea soup, canned, reduced sodium, prepared with water or ready-to-serve
41602090	Split pea and ham soup, canned, reduced sodium, prepared with water or ready-to-serve
41603010	Lentil soup, home recipe, canned, or ready-to-serve
41812500	Tofu and vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, with soy-based sauce*
41812510	Tofu and vegetables excluding carrots, broccoli, and dark-green leafy; no potatoes, with soy-based sauce*
43103100	Sesame sauce*
58103130	Tamale with chicken*
58103310	Tamale casserole with meat*
58120110	Crepe, filled with meat, poultry, or seafood, with sauce*
58120120	Crepe, filled with meat, poultry, or seafood, no sauce*
58127110	Vegetables in pastry*
58128210	Dressing with oysters*
58156610	Pigeon pea asopao, Asopao de gandules
58163130	Dirty rice*
58163410	Spanish rice, fat added in cooking*
58163420	Spanish rice, fat not added in cooking*
58163430	Spanish rice, NS as to fat added in cooking*
58163450	Spanish rice with ground beef*

Food code	Food description
58163510	Rice dressing*
58164560	Rice, white, with soy-based sauce, NS as to fat added in cooking*
58164570	Rice, white, with soy-based sauce, fat not added in cooking*
58164870	Rice, brown, with soy-based sauce, fat not added in cooking*
58165060	Rice, white, with vegetables, soy-based sauce, NS as to fat added in cooking*
58165070	Rice, white, with vegetables, soy-based sauce, fat not added in cooking*
58165080	Rice, white, with vegetables, soy-based sauce, fat added in cooking*
58165470	Rice, brown, with vegetables, soy-based sauce, fat not added in cooking*
58165480	Rice, brown, with vegetables, soy-based sauce, fat added in cooking*
58400000	Soup, NFS
58400100	Noodle soup, NFS
58400200	Rice soup, NFS
58401010	Barley soup, home recipe, canned, or ready-to-serve
58401200	Barley soup, sweet, with or without nuts, Asian Style
58402010	Beef noodle soup, canned or ready-to-serve
58402020	Beef dumpling soup, home recipe, canned or ready-to-serve
58402030	Beef rice soup, home recipe, canned or ready-to-serve
58402100	Beef noodle soup, home recipe
58403010	Chicken or turkey noodle soup, canned or ready-to-serve
58403040	Chicken or turkey noodle soup, home recipe
58403050	Chicken or turkey noodle soup, cream of, home recipe, canned, or ready-to-serve
58403060	Chicken or turkey noodle soup, reduced sodium, canned or ready-to-serve
58403100	Noodle and potato soup, Puerto Rican style
58404010	Chicken or turkey rice soup, canned, or ready-to-serve
58404030	Chicken or turkey rice soup, home recipe
58404040	Chicken or turkey rice soup, reduced sodium, canned, prepared with water or ready-to-serve
58404100	Rice and potato soup, Puerto Rican style
58404520	Chicken or turkey soup with dumplings, home recipe, canned or ready-to-serve
58407010	Instant soup, noodle
58407030	Soup, mostly noodles
58407035	Soup, mostly noodles, reduced sodium
58408010	Wonton soup
58408500	Noodle soup with vegetables, Asian style
58409000	Noodle soup, with fish ball, shrimp, and dark green leafy vegetable
58421000	Sopa seca, Mexican style, NFS
58421010	Sopa Seca de Fideo, Mexican style, made with dry noodles, home recipe
58421020	Sopa de Fideo Aguada, Mexican style noodle soup, home recipe
58421060	Sopa seca de arroz, home recipe, Mexican style
58421080	Sopa de tortilla, Mexican style tortilla soup, home recipe
63415100	Soup, fruit
71507050	White potato, stuffed, baked, peel not eaten, stuffed with meat in cream sauce*
71508050	White potato, stuffed, baked, peel eaten, stuffed with meat in cream sauce*
71801000	Potato soup, NS as to made with milk or water
71801010	Potato soup, cream of, prepared with milk
71801020	Potato soup, prepared with water
71801100	Potato and cheese soup
71803010	Potato chowder

Food code	Food description
72202020	Broccoli casserole with rice*
72302000	Broccoli soup, prepared with milk, home recipe, canned or ready-to-serve
72302020	Broccoli soup, prepared with water, home recipe, canned, or ready-to-serve
72302100	Broccoli cheese soup, prepared with milk, home recipe, canned, or ready-to-serve
72307000	Spinach soup
72308000	Dark-green leafy vegetable soup with meat, Asian style
72308500	Dark-green leafy vegetable soup, meatless, Asian style
73501000	Carrot soup, cream of, prepared with milk, home recipe, canned or ready-to-serve
73502000	Squash, winter type, soup, home recipe, canned, or ready-to-serve
74404090	Vodka sauce with tomatoes and cream*
74601000	Tomato soup, NFS
74601010	Tomato soup, cream of, prepared with milk
74602010	Tomato soup, prepared with water, or ready-to-serve
74602050	Tomato soup, instant type, prepared with water
74602200	Tomato soup, canned, reduced sodium, prepared with water, or ready-to-serve
74603010	Tomato beef soup, prepared with water
74604010	Tomato beef noodle soup, prepared with water
74604500	Tomato noodle soup, canned, prepared with water or ready-to-serve
74604600	Tomato noodle soup, canned, prepared with milk
74605010	Tomato rice soup, prepared with water
74606010	Tomato vegetable soup, prepared with water
74606020	Tomato vegetable soup with noodles, prepared with water
75403020	Beans, string, green, cooked, NS as to form, with mushroom sauce*
75403022	Beans, string, green, cooked, from frozen, with mushroom sauce*
75403023	Beans, string, green, cooked, from canned, with mushroom sauce*
75417022	Peas, cooked, from frozen, with mushroom sauce*
75440100	Vegetable combination, including carrots, broccoli, and/or dark-green leafy; cooked, with soy-based sauce*
75440110	Vegetable combination, excluding carrots, broccoli, and dark-green leafy; cooked, with soy-based sauce*
75601000	Asparagus soup, cream of, NS as to made with milk or water
75601010	Asparagus soup, cream of, prepared with milk
75601020	Asparagus soup, cream of, prepared with water
75601100	Borscht
75601200	Cabbage soup, home recipe, canned or ready-to-serve
75601210	Cabbage with meat soup, home recipe, canned or ready-to-serve
75603010	Celery soup, cream of, prepared with milk, home recipe, canned or ready-to-serve
75604010	Corn soup, cream of, prepared with milk
75604020	Corn soup, cream of, prepared with water
75604600	Gazpacho
75607000	Mushroom soup, NFS
75607010	Mushroom soup, cream of, prepared with milk
75607020	Mushroom soup, cream of, prepared with water
75607040	Mushroom soup, with meat broth, prepared with water
75607060	Mushroom soup, cream of, NS as to made with milk or water
75607090	Mushroom soup, cream of, canned, reduced sodium, NS as to made with milk or water
75607140	Mushroom soup, cream of, canned, reduced sodium, prepared with water
75608010	Onion soup, cream of, prepared with milk

Food code	Food description
75608100	Onion soup, French*
75608200	Onion soup, made from dry mix
75611010	Vegetable soup, cream of, prepared with milk
75612010	Zucchini soup, cream of, prepared with milk
75646010	Shav soup
75647000	Seaweed soup
75649010	Vegetable soup, canned, prepared with water or ready-to-serve
75649040	Vegetable soup, reduced sodium, canned, ready to serve
75649050	Vegetable soup, made from dry mix
75649110	Vegetable soup, home recipe
75649150	Vegetable noodle soup, home recipe
75650990	Minestrone soup, reduced sodium, canned or ready-to-serve
75651000	Minestrone soup, home recipe
75651010	Minestrone soup, canned, prepared with water, or ready-to-serve
75651020	Vegetable beef soup, canned, prepared with water, or ready-to-serve
75651030	Vegetable beef noodle soup, prepared with water
75651040	Vegetable noodle soup, canned, prepared with water, or ready-to-serve
75651070	Vegetable rice soup, canned, prepared with water or ready-to-serve
75651080	Vegetable beef soup with rice, canned, prepared with water or ready-to-serve
75651110	Vegetable chicken rice soup, canned, prepared with water or ready-to-serve
75651140	Vegetable soup with chicken broth, home recipe, Mexican style
75651150	Vegetable noodle soup, reduced sodium, canned, prepared with water or ready-to-serve
75652010	Vegetable beef soup, home recipe
75652040	Vegetable beef soup with noodles or pasta, home recipe
75652050	Vegetable beef soup with rice, home recipe
75654010	Vegetarian vegetable soup, prepared with water
75656020	Vegetable soup, chunky style
75656040	Vegetable soup, with pasta, chunky style
75656060	Vegetable beef soup, chunky style
75657000	Vegetable broth, bouillon
81301000	Garlic sauce*

* Only the proportion of the food corresponding to the intended use of PeptAIde™ was included in the assessment of dietary intake.

** Non-reconstituted amount adjusted to the prepared amount.

Table C-2. NHANES food codes representative of the existing GRAS uses of rice protein used in the analysis

Food code	Food description
Baked goods and baking mixes	
English muffins	
32202040	Egg, cheese, and beef on English Muffin*
51186010	Muffin, English
51186100	Muffin, English, with raisins
51186160	Muffin, English, with fruit other than raisins
51302500	Muffin, English, wheat bran
51303010	Muffin, English, wheat or cracked wheat
51303030	Muffin, English, whole wheat
51303050	Muffin, English, wheat or cracked wheat, with raisins
51303070	Muffin, English, whole wheat, with raisins
51303100	Muffin, English, whole grain white
51630200	Muffin, English, multigrain
Bagels	
32202025	Egg, cheese and ham on bagel*
32202045	Egg, cheese, and steak on bagel*
32202085	Egg, cheese and bacon on bagel*
32202120	Egg, cheese and sausage on bagel*
51180010	Bagel
51180030	Bagel, with raisins
51180080	Bagel, with fruit other than raisins
51300100	Bagel, whole grain white
51301700	Bagel, wheat
51301750	Bagel, whole wheat
51301800	Bagel, wheat, with raisins
51301805	Bagel, whole wheat, with raisins
51301820	Bagel, wheat, with fruit and nuts
51404500	Bagel, pumpernickel
51501080	Bagel, oat bran
51630000	Bagel, multigrain
51630100	Bagel, multigrain, with raisins
Breakfast cereals	
Breakfast cereals, ready-to-eat, weighing less than 20 g per cup	
57137000	Cereal, corn puffs
57301500	Cereal (Kashi 7 Whole Grain Puffs)
57306100	Malt-O-Meal Puffed Rice
57306120	Malt-O-Meal Puffed Wheat
57340000	Cereal, puffed rice
57416000	Cereal, puffed wheat, plain
Breakfast cereals, ready-to-eat, weighing 20 g or more but less than 43 g per cup; high fiber cereals containing 28 g or more of fiber per 100 g	
57000050	Kashi cereal, NS as to ready to eat or cooked
57000100	Cereal, oat, NFS
57100100	Cereal, ready-to-eat, NFS
57103000	Cereal (Post Alpha-Bits)

Food code	Food description
57103020	Alpha-bits with marshmallows
57103100	Cereal (General Mills Cheerios Apple Cinnamon)
57104000	Cereal (Kellogg's Apple Jacks)
57106060	Cereal (General Mills Cheerios Banana Nut)
57106250	Cereal (General Mills Kix Berry Berry)
57106260	Cereal (General Mills Cheerios Berry Burst)
57107000	Cereal (General Mills Boo Berry)
57117000	Cereal (Quaker Cap'n Crunch)
57119000	Cereal (Quaker Cap'n Crunch's Crunchberries)
57120000	Cereal (Quaker Cap'n Crunch's Peanut Butter Crunch)
57123000	Cereal (General Mills Cheerios)
57124000	Chex cereal, NFS
57124050	Cereal (General Mills Chex Cinnamon)
57124100	Cereal (General Mills Cheerios Chocolate)
57124200	Cereal, chocolate flavored, frosted, puffed corn
57124300	Cereal (General Mills Lucky Charms Chocolate)
57124900	Cereal (Kellogg's Cinnabon)
57125000	Cereal (General Mills Cinnamon Toast Crunch)
57125010	Cereal (General Mills 25% Less Sugar Cinnamon Toast Crunch)
57126000	Cereal (Kellogg's Cocoa Krispies)
57127000	Cereal (Post Cocoa Pebbles)
57128000	Cereal (General Mills Cocoa Puffs)
57128005	Cereal (General Mills 25% Less Sugar Cocoa Puffs)
57130000	Cereal (General Mills Cookie Crisp)
57131000	Cereal (Quaker Corn Bran Crunch)
57132000	Cereal (General Mills Chex Corn)
57134000	Cereal, corn flakes
57135000	Cereal (Kellogg's Corn Flakes)
57139000	Cereal (General Mills Count Chocula)
57148000	Cereal (Kellogg's Crispix)
57148500	Cereal, crispy brown rice
57151000	Cereal, crispy rice
57201900	Cereal (General Mills Dora The Explorer)
57208000	Cereal (Kellogg's All-Bran Complete Wheat Flakes)
57209000	Cereal (Post Bran Flakes)
57211000	Cereal (General Mills Frankenberry)
57213000	Cereal (Kellogg's Froot Loops)
57213010	Cereal (Kellogg's Froot Loops Marshmallow)
57213850	Cereal (General Mills Cheerios Frosted)
57215000	Frosty O's
57218000	Cereal (Kellogg's Frosted Krispies)
57221700	Cereal, fruit rings
57221800	Cereal, fruit whirls
57221810	Cereal (General Mills Cheerios Fruity)
57223000	Cereal (Post Fruity Pebbles)
57224000	Cereal (General Mills Golden Grahams)
57231000	Cereal (Post Grape-Nuts Flakes)
57237100	Cereal (Post Honey Bunches of Oats Honey Roasted)

Food code	Food description
57238000	Cereal (Post Honeycomb)
57239000	Honeycomb, strawberry
57239100	Cereal (Kellogg's Honey Crunch Corn Flakes)
57240100	Cereal (General Mills Chex Honey Nut)
57241000	Cereal (General Mills Cheerios Honey Nut)
57243000	Cereal (Kellogg's Honey Smacks)
57303100	Cereal (General Mills Kix)
57303105	Cereal (General Mills Honey Kix)
57303200	Cereal (Kellogg's Krave)
57305100	Cereal (General Mills Lucky Charms)
57305150	Cereal, frosted oat cereal with marshmallows
57305165	Cereal (Malt-O-Meal Cinnamon Toasters)
57305170	Cereal (Malt-O-Meal Coco-Roos)
57305174	Cereal (Malt-O-Meal Colossal Crunch)
57305175	Cereal (Malt-O-Meal Cocoa Dyno-Bites)
57305180	Cereal (Malt-O-Meal Corn Bursts)
57305200	Cereal (Malt-O-Meal Crispy Rice)
57305210	Cereal (Malt-O-Meal Frosted Flakes)
57305300	Cereal (Malt-O-Meal Fruity Dyno-Bites)
57305400	Cereal (Malt-O-Meal Honey Graham Squares)
57305500	Cereal (Malt-O-Meal Honey Nut Toasty O's)
57305600	Cereal (Malt-O-Meal Marshmallow Mateys)
57306500	Cereal (Malt-O-Meal Golden Puffs)
57306700	Cereal (Malt-O-Meal Toasted Oat Cereal)
57306800	Cereal (Malt-O-Meal Tootie Fruities)
57307500	Cereal, millet, puffed
57308400	Cereal (General Mills Cheerios Multigrain)
57316380	Cereal (General Mills Cheerios Oat Cluster Crunch)
57316710	Cereal (Quaker Honey Graham Oh's)
57321900	Cereal (Nature's Path Organic Flax Plus)
57326000	Cereal (Barbara's Puffins)
57335550	Cereal (General Mills Reese's Puffs)
57336000	Cereal (General Mills Chex Rice)
57337000	Cereal, rice flakes
57339000	Cereal (Kellogg's Rice Krispies)
57339500	Cereal (Kellogg's Rice Krispies Treats Cereal)
57344000	Cereal (Kellogg's Special K)
57344001	Cereal (Kellogg's Special K Blueberry)
57344005	Cereal (Kellogg's Special K Chocolatey Delight)
57344010	Cereal (Kellogg's Special K Red Berries)
57344020	Cereal (Kellogg's Special K Vanilla Almond)
57344025	Cereal (Kellogg's Special K Cinnamon Pecan)
57347000	Cereal (Kellogg's Corn Pops)
57348000	Cereal, frosted corn flakes
57349000	Cereal (Kellogg's Frosted Flakes)
57349020	Cereal (Kellogg's Frosted Flakes, Reduced Sugar)
57355000	Cereal (Post Golden Crisp)
57401100	Cereal, toasted oat

Food code	Food description
57406100	Cereal (General Mills Total)
57407100	Cereal (General Mills Trix)
57407110	Cereal (General Mills 25% Less Sugar Trix)
57416010	Cereal, puffed wheat, sweetened
57418000	Cereal (General Mills Wheaties)
57419000	Cereal (General Mills Cheerios Yogurt Burst)
Breakfast cereals, ready-to-eat, weighing 43 g or more per cup; biscuit types	
57101000	Cereal (Kellogg's All-Bran)
57106050	Cereal (Post Great Grains Banana Nut Crunch)
57106100	Cereal (General Mills Basic 4)
57110000	Cereal (Kellogg's All-Bran Bran Buds)
57124030	Cereal (General Mills Chex Chocolate)
57125900	Cereal (General Mills Honey Nut Clusters)
57143000	Cereal (Kellogg's Cracklin' Oat Bran)
57143500	Cereal (Post Great Grains, Cranberry Almond Crunch)
57206700	Cereal (General Mills Fiber One)
57206705	Cereal (General Mills Fiber One Caramel Delight)
57206710	Cereal (General Mills Fiber One Honey Clusters)
57206715	Cereal (General Mills Fiber One Raisin Bran Clusters)
57207000	Cereal, bran flakes
57214000	Cereal (Kellogg's Frosted Mini-Wheats)
57214100	Frosted Wheat Bites
57216000	Cereal, frosted rice
57219000	Cereal, fruit and fiber
57227000	Cereal, granola
57229000	Cereal (Kellogg's Low Fat Granola)
57229500	Cereal (Kellogg's Low Fat Granola with Raisins)
57230000	Cereal (Post Grape-Nuts)
57231200	Cereal (Post Great Grains Raisins, Dates, and Pecans)
57231250	Cereal (Post Great Grains Double Pecan Whole Grain Cereal)
57237200	Cereal (Post Honey Bunches of Oats with Vanilla Bunches)
57237300	Cereal (Post Honey Bunches of Oats with Almonds)
57237900	Cereal (Post Honey Bunches of Oats Just Bunches)
57241200	Cereal (Post Shredded Wheat Honey Nut)
57301505	Cereal (Kashi Autumn Wheat)
57301510	Cereal (Kashi GOLEAN)
57301511	Cereal (Kashi GOLEAN Crunch)
57301512	Cereal (Kashi GOLEAN Crunch Honey Almond Flax)
57301520	Cereal (Kashi Good Friends)
57301530	Cereal (Kashi Heart to Heart Honey Toasted Oat)
57301535	Cereal (Kashi Heart to Heart Oat Flakes and Blueberry Clusters)
57304100	Cereal (Quaker Life)
57305215	Cereal (Malt-O-Meal Frosted Mini Spooners)
57306130	Cereal (Malt-O-Meal Raisin Bran)
57307010	Cereal (Post Maple Pecan Crunch)
57308150	Mueslix cereal, NFS
57308190	Cereal, muesli
57309100	Cereal (Nature Valley Granola)

Food code	Food description
57316300	Cereal (Health Valley Oat Bran Flakes)
57316450	Cereal (General Mills Oatmeal Crisp with Almonds)
57320500	Cereal (Quaker Granola with Oats, Honey, and Raisins)
57321905	Organic Flax Plus, Pumpkin Granola, Nature's Path
57327450	Cereal (Quaker Toasted Oat Bran)
57327500	Cereal (Quaker Oatmeal Squares)
57329000	Cereal, raisin bran
57330000	Cereal (Kellogg's Raisin Bran)
57330010	Cereal (Kellogg's Raisin Bran Crunch)
57331000	Cereal (Post Raisin Bran)
57332050	Cereal (General Mills Total Raisin Bran)
57332100	Cereal (General Mills Raisin Nut Bran)
57341000	Cereal (Post Shredded Wheat'n Bran)
57341200	Cereal (Kellogg's Smart Start Strong)
57344007	Cereal (Kellogg's Special K Low Fat Granola)
57344015	Cereal (Kellogg's Special K Fruit & Yogurt)
57410000	Cereal (Weetabix Whole Grain)
57411000	Cereal (General Mills Chex Wheat)
57417000	Cereal (Post Shredded Wheat)
Fats and oils	
Margarine	
13210110	Pudding, bread*
13210750	Pudding, pumpkin*
13210810	Pumpkin pudding, Puerto Rican style*
13411000	White sauce, milk sauce*
14640050	Cheese sandwich, American cheese, on white bread, with butter*
14640054	Cheese sandwich, American cheese, on whole wheat bread, with butter*
14640056	Cheese sandwich, Cheddar cheese, on white bread, with butter*
14640060	Cheese sandwich, Cheddar cheese, on whole wheat bread, with butter*
14640062	Cheese sandwich, reduced fat American cheese, on white bread, with butter*
14640100	Grilled cheese sandwich, NFS*
14640105	Grilled cheese sandwich, American cheese, on white bread*
14640110	Grilled cheese sandwich, American cheese, on wheat bread*
14640115	Grilled cheese sandwich, American cheese, on whole wheat bread*
14640125	Grilled cheese sandwich, Cheddar cheese, on white bread*
14640130	Grilled cheese sandwich, Cheddar cheese, on wheat bread*
14640135	Grilled cheese sandwich, Cheddar cheese, on whole wheat bread*
14640155	Grilled cheese sandwich, reduced fat American cheese, on white bread*
14640165	Grilled cheese sandwich, reduced fat American cheese, on whole wheat bread*
14640185	Grilled cheese sandwich, reduced fat Cheddar cheese, on white bread*
14640190	Grilled cheese sandwich, reduced fat Cheddar cheese, on wheat bread*
14640195	Grilled cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread*
24168000	Chicken "wings" with hot sauce, from fast food / restaurant*
24168010	Chicken "wings" with hot sauce, from precooked*
24168020	Chicken "wings" with hot sauce, from other sources*
24168030	Chicken "wings", boneless, with hot sauce, from fast food / restaurant*
24168031	Chicken "wings", boneless, with hot sauce, from other sources*
26100122	Fish, NS as to type, baked or broiled, made with margarine*

Food code	Food description
26100142	Fish, NS as to type, coated, fried, made with margarine*
26115132	Flounder, coated, baked or broiled, made with margarine*
26137122	Salmon, baked or broiled, made with margarine*
26151122	Trout, baked or broiled, made with margarine*
26151142	Trout, coated, fried, made with margarine*
26158012	Tilapia, baked or broiled, made with margarine*
26158032	Tilapia, coated, fried, made with margarine*
26319122	Shrimp, baked or broiled, made with margarine*
26319142	Shrimp, coated, fried, made with margarine*
27113200	Creamed chipped or dried beef*
27120120	Sausage gravy*
27212000	Beef and noodles, no sauce*
27243300	Chicken or turkey and rice with cream sauce*
27250080	Salmon loaf*
27250250	Flounder with crab stuffing*
27250410	Shrimp with crab stuffing*
27311510	Shepherd's pie with beef*
27317010	Beef pot pie*
27345230	Chicken or turkey, rice, corn, and cheese, with gravy*
27350030	Seafood stew with potatoes and vegetables excluding carrots, broccoli, and dark-green leafy; tomato-based sauce*
27350060	Shrimp creole, with rice*
27350070	Tuna pot pie*
27443110	Chicken or turkey a la king with vegetables including carrots, broccoli, and/or dark-green leafy; no potatoes, cream, white, or soup-based sauce*
27443120	Chicken or turkey a la king with vegetables excluding carrorts, broccoli, and dark-green leafy; no potatoes, cream, white, or soup-based sauce*
27443150	Chicken or turkey divan*
27450450	Shrimp creole, no rice*
27460750	Liver, beef or calves, and onions*
27510480	Cheeseburger (hamburger with cheese sauce), 1/4 lb meat, with grilled onions, on rye bun*
28110380	Salisbury steak with gravy, macaroni and cheese, frozen meal*
28110510	Beef, sliced, with gravy, potatoes, vegetable, frozen meal*
28110660	Meatballs, Swedish, in gravy, with noodles, diet frozen meal*
28140720	Chicken patty, or nuggets, boneless, breaded, potatoes, vegetable, frozen meal*
28140730	Chicken patty, breaded, with tomato sauce and cheese, fettuccine alfredo, vegetable, frozen meal*
28140810	Chicken, fried, with potatoes, vegetable, dessert, frozen meal*
28141010	Chicken, fried, with potatoes, vegetable, dessert, frozen meal, large meat portion*
28143110	Chicken cacciatore with noodles, diet frozen meal*
28145610	Turkey with gravy, dressing, potatoes, vegetable, dessert, frozen meal*
28145710	Turkey tetrazzini, frozen meal*
28160300	Meat loaf dinner, NFS, frozen meal*
28160310	Meat loaf with potatoes, vegetable, frozen meal*
28160650	Stuffed green pepper, frozen meal*
31105005	Egg, whole, fried, NS as to fat added in cooking*
31105020	Egg, whole, fried with margarine*

Food code	Food description
31105085	Egg, whole, fried, NS as to type of fat*
31106000	Egg, whole, baked, NS as to fat added in cooking*
31106020	Egg, whole, baked, fat added in cooking*
31108100	Egg, white, cooked, NS as to fat added in cooking*
31108120	Egg, white, cooked, fat added in cooking*
32101500	Egg, Benedict*
32129990	Egg omelet or scrambled egg, NS as to fat added in cooking*
32130000	Egg omelet or scrambled egg, made with margarine*
32130065	Egg omelet or scrambled egg, NS as to type of fat*
32130100	Egg omelet or scrambled egg, with cheese, made with margarine*
32130190	Egg omelet or scrambled egg, with meat, NS as to fat added in cooking*
32130200	Egg omelet or scrambled egg, with meat, made with margarine*
32130265	Egg omelet or scrambled egg, with meat, NS as to type of fat*
32130290	Egg omelet or scrambled egg, with cheese and meat, NS as to fat added in cooking*
32130300	Egg omelet or scrambled egg, with cheese and meat, made with margarine*
32202040	Egg, cheese, and beef on English Muffin*
32202130	Egg and steak on biscuit*
32202200	Egg and cheese on biscuit*
32400055	Egg white omelet, scrambled, or fried, NS as to fat added in cooking*
32400060	Egg white omelet, scrambled, or fried, made with margarine*
32400078	Egg white omelet, scrambled, or fried, NS as to type of fat*
33000990	Egg substitute, omelet, scrambled, or fried, NS as to fat added in cooking*
33001000	Egg substitute, omelet, scrambled, or fried, made with margarine*
41101113	White beans, dry, cooked, made with margarine*
41102013	Black, brown, or Bayo beans, dry, cooked, made with margarine*
41103013	Lima beans, dry, cooked, made with margarine*
41104013	Pinto, calico, or red Mexican beans, dry, cooked, made with margarine*
41106013	Red kidney beans, dry, cooked, made with margarine*
41205013	Refried beans, made with margarine*
41303013	Green or yellow split peas, dry, cooked, made with margarine*
51161270	Pan Dulce, with sugar topping*
51182010	Bread stuffing*
52105100	Scone*
52105200	Scone, with fruit*
52220110	Arepa Dominicana*
53115410	Cake or cupcake, oatmeal*
53116570	Cake, Ravani*
53200100	Cookie, batter or dough, raw*
53224250	Cookie, lemon bar*
53244020	Cookie, butter or sugar, with icing or filling other than chocolate*
53301500	Pie, apple, one crust*
53303000	Pie, blackberry, two crust*
53303500	Pie, berry, not blackberry, blueberry, boysenberry, huckleberry, raspberry, or strawberry; two crust*
53303570	Pie, berry, not blackberry, blueberry, boysenberry, huckleberry, raspberry, or strawberry, individual size or tart*
53304070	Pie, blueberry, individual size or tart*
53305010	Pie, cherry, one crust*

Food code	Food description
53305700	Pie, lemon, not cream or meringue*
53305720	Pie, lemon, not cream or meringue, individual size or tart*
53310050	Pie, raspberry, two crust*
53345000	Pie, lemon cream*
53345070	Pie, lemon cream, individual size or tart*
53366000	Pie, yogurt, frozen*
53385500	Pie, oatmeal*
53387000	Pie, Toll house chocolate chip*
53400200	Blintz, cheese-filled*
53410100	Cobbler, apple*
53410500	Cobbler, cherry*
53410900	Cobbler, rhubarb*
53415100	Crisp, apple, apple dessert*
53415200	Fritter, banana*
53415220	Fritter, berry*
53415400	Crisp, cherry*
53415500	Crisp, peach*
53420300	Air filled fritter or fried puff, without syrup, Puerto Rican style*
53420310	Wheat flour fritter, without syrup*
53430000	Crepe, NS as to filling*
53430100	Crepe, chocolate filled*
53430200	Crepe, fruit filled*
53440300	Strudel, berry*
53440500	Strudel, cherry*
53440600	Strudel, cheese*
53450000	Turnover or dumpling, apple*
53450500	Turnover or dumpling, cherry*
53450800	Turnover or dumpling, lemon*
53451500	Turnover, guava*
53452450	Cheese pastry puffs*
53520150	Doughnut, cake type, chocolate covered, dipped in peanuts*
53521100	Doughnut, chocolate, raised or yeast, with chocolate icing*
53521130	Doughnut, raised or yeast, chocolate covered*
54403040	Popcorn, air-popped, with added butter or margarine*
54403046	Popcorn, popped in oil, with added butter or margarine*
55100005	Pancakes, NFS*
55100015	Pancakes, plain, reduced fat, from fozen*
55100050	Pancakes, plain, from fast food / restaurant*
55100055	Pancakes, with fruit, from fast food / restaurant*
55100060	Pancakes, with chocolate, from fast food / restaurant*
55100065	Pancakes, whole grain, from fast food / restaurant*
55101000	Pancakes, plain*
55101015	Pancakes, plain, reduced fat*
55103000	Pancakes, with fruit*
55103020	Pancakes, pumpkin*
55103100	Pancakes, with chocolate*
55105000	Pancakes, buckwheat*
55105100	Pancakes, cornmeal*

Food code	Food description
55105200	Pancakes, whole grain*
55105205	Pancakes, whole grain, reduced fat*
55200100	Waffle, plain, from fast food / restaurant*
55200110	Waffle, chocolate, from fast food / restaurant*
55200120	Waffle, fruit, from fast food / restaurant*
55200130	Waffle, whole grain, from fast food / restaurant*
55201000	Waffle, plain*
55203000	Waffle, fruit*
55203600	Waffle, chocolate*
55203700	Waffle, cinnamon*
55205000	Waffle, whole grain*
55211050	Waffle, plain, reduced fat*
55212000	Waffle, whole grain, reduced fat*
55300010	French toast, NFS*
55300050	French toast, plain, from fast food / restaurant*
55301000	French toast, plain*
55301015	French toast, whole grain*
55301025	French toast, gluten free*
55301055	French toast sticks, whole grain*
56200510	Buckwheat groats, fat added in cooking*
56200990	Grits, NS as to regular, quick, or instant, NS as to fat added in cooking*
56201020	Grits, cooked, corn or hominy, regular, fat added in cooking*
56201040	Grits, NS as to regular, quick, or instant, fat added in cooking*
56201050	Grits, regular or quick, made with water, NS as to fat added in cooking*
56201052	Grits, regular or quick, made with water, fat added in cooking*
56201055	Grits, regular or quick, made with milk, NS as to fat added in cooking*
56201057	Grits, regular or quick, made with milk, fat added in cooking*
56201072	Grits, cooked, corn or hominy, with cheese, regular, fat added in cooking*
56201082	Grits, cooked, corn or hominy, with cheese, quick, fat added in cooking*
56201090	Grits, with cheese, NS as to fat added in cooking*
56201092	Grits, with cheese, fat added in cooking*
56201120	Grits, cooked, corn or hominy, quick, fat added in cooking*
56201220	Grits, instant, made with water, fat added in cooking*
56201230	Grits, instant, made with water, NS as to fat added in cooking*
56201320	Grits, cooked, corn or hominy, regular, made with milk, fat added in cooking*
56201324	Grits, cooked, corn or hominy, regular, made with milk, NS as to fat added in cooking*
56201330	Grits, cooked, corn or hominy, quick, made with milk, fat added in cooking*
56201340	Grits, instant, made with milk, fat added in cooking*
56201515	Cornmeal mush, NS as to fat added in cooking*
56201517	Cornmeal mush, fat added in cooking*
56201550	Cornmeal dumpling*
56202100	Millet, fat added in cooking*
56202960	Oatmeal, NS as to regular, quick, or instant, NS as to fat added in cooking*
56203040	Oatmeal, NS as to regular, quick, or instant, fat added in cooking*
56203050	Oatmeal, cooked, regular, fat added in cooking*
56203055	Oatmeal, regular or quick, made with water, NS as to fat added in cooking*
56203057	Oatmeal, regular or quick, made with water, fat added in cooking*

Food code	Food description
56203060	Oatmeal, cooked, quick (1 or 3 minutes), fat added in cooking*
56203067	Oatmeal, regular or quick, made with milk, fat added in cooking*
56203070	Oatmeal, cooked, instant, fat added in cooking*
56203077	Oatmeal, regular or quick, made with non-dairy milk, fat added in cooking*
56203087	Oatmeal, instant, plain, made with water, fat added in cooking*
56203097	Oatmeal, instant, plain, made with milk, fat added in cooking*
56203125	Oatmeal, instant, maple flavored, NS as to fat added in cooking*
56203135	Oatmeal, instant, maple flavored, fat added in cooking*
56203150	Oatmeal, instant, fruit flavored, NS as to fat added in cooking*
56203160	Oatmeal, instant, fruit flavored, fat added in cooking*
56203180	Oatmeal, instant, other flavors, fat added in cooking*
56203220	Oatmeal, NS as to regular, quick, or instant, made with milk, fat added in cooking*
56203221	Oatmeal, cooked, regular, made with milk, fat added in cooking*
56203222	Oatmeal, cooked, quick (1 or 3 minutes), made with milk, fat added in cooking*
56203223	Oatmeal, cooked, instant, made with milk, fat added in cooking*
56203560	Oatmeal, reduced sugar, flavored, fat added in cooking*
56203600	Oatmeal, multigrain, NS as to fat added in cooking*
56203620	Oatmeal, multigrain, fat added in cooking*
56204000	Quinoa, NS as to fat added in cooking*
56204010	Quinoa, fat added in cooking*
56205006	Rice, white, cooked, fat added in cooking, made with margarine*
56205007	Rice, white, cooked, fat added in cooking, NS as to type of fat*
56205016	Rice, brown, cooked, fat added in cooking, made with margarine*
56205090	Rice, cream of, cooked, fat added in cooking*
56205094	Rice, cream of, cooked, made with milk*
56205170	Yellow rice, cooked, fat added in cooking*
56205320	Rice, white and wild, cooked, fat added in cooking*
56205330	Rice, white and wild, cooked, NS as to fat added in cooking*
56205350	Rice, brown and wild, cooked, NS as to fat added in cooking*
56206990	Cream of wheat, NS as to regular, quick, or instant, NS as to fat added in cooking*
56207005	Cream of wheat, NS as to regular, quick, or instant, fat added in cooking*
56207017	Cream of wheat, regular or quick, made with water, fat added in cooking*
56207023	Cream of wheat, regular or quick, made with milk, fat added in cooking*
56207027	Cream of wheat, regular or quick, made with non-dairy milk, fat added in cooking*
56207060	Cream of wheat, instant, made with water, fat added in cooking*
56207086	Wheat, cream of, cooked, regular, made with milk, fat added in cooking*
56207094	Cream of wheat, instant, made with milk, fat added in cooking*
56207120	Bulgur, fat added in cooking*
56207190	Whole wheat cereal, cooked, NS as to fat added in cooking*
56207210	Whole wheat cereal, cooked, fat added in cooking*
56207220	Wheat, cream of, cooked, regular, fat added in cooking*
56207330	Whole wheat cereal, wheat and barley, cooked, fat added in cooking*
56208510	Oat bran cereal, cooked, fat added in cooking*
58108000	Calzone, with cheese, meatless*
58108010	Calzone, with meat and cheese*
58120110	Crepe, filled with meat, poultry, or seafood, with sauce*
58122210	Gnocchi, cheese*
58122310	Knish, potato*

Food code	Food description
58122320	Knish, cheese*
58122330	Knish, meat*
58124210	Pastry, cheese-filled*
58124500	Pastry, filled with potatoes and peas, fried*
58128000	Biscuit with gravy*
58128120	Cornmeal dressing with chicken or turkey and vegetables*
58128210	Dressing with oysters*
58128220	Dressing with chicken or turkey and vegetables*
58128250	Dressing with meat and vegetables*
58131110	Ravioli, NS as to filling, with tomato sauce*
58131120	Ravioli, NS as to filling, with cream sauce*
58131320	Ravioli, meat-filled, with tomato sauce or meat sauce*
58131330	Ravioli, meat-filled, with cream sauce*
58131530	Ravioli, cheese-filled, with meat sauce*
58131535	Ravioli, cheese-filled, with cream sauce*
58131600	Ravioli, cheese and spinach-filled, with cream sauce*
58134610	Tortellini, meat-filled, with tomato sauce*
58134650	Tortellini, meat-filled, no sauce*
58134710	Tortellini, spinach-filled, with tomato sauce*
58134720	Tortellini, spinach-filled, no sauce*
58145110	Macaroni or noodles with cheese*
58145112	Macaroni or noodles with cheese, made from packaged mix*
58145119	Macaroni or noodles with cheese, made from reduced fat packaged mix*
58145120	Macaroni or noodles with cheese and tuna*
58145135	Macaroni or noodles with cheese and meat*
58145140	Macaroni or noodles with cheese and tomato*
58145160	Macaroni or noodles with cheese and frankfurters or hot dogs*
58145170	Macaroni or noodles with cheese and egg*
58145190	Macaroni or noodles with cheese and chicken or turkey*
58147510	Flavored pasta*
58163310	Flavored rice mixture*
58163380	Flavored rice and pasta mixture*
58163510	Rice dressing*
58301110	Vegetable lasagna, frozen meal*
58304010	Spaghetti and meatballs dinner, NFS, frozen meal*
58304060	Spaghetti with meat sauce, diet frozen meal*
58310310	Pancakes and sausage, frozen meal*
61113500	Lemon pie filling*
63101500	Apple, fried*
63113030	Cherry pie filling*
71000100	Potato, NFS*
71101100	White potato, baked, peel eaten, NS as to fat added in cooking*
71101120	White potato, baked, peel eaten, fat added in cooking*
71102980	Potato, boiled, NFS*
71102990	Potato, boiled, ready-to-heat*
71103000	Potato, boiled, from fresh, peel not eaten, NS as to fat added in cooking*
71103020	Potato, boiled, from fresh, peel not eaten, fat added in cooking, NS as to type of fat*
71103050	Potato, boiled, from fresh, peel not eaten, made with margarine*

Food code	Food description
71103100	White potato, boiled with peel, peel not eaten, NS as to fat added in cooking*
71103105	Potato, boiled, from fresh, peel eaten, NS as to fat added in cooking*
71103115	Potato, boiled, from fresh, peel eaten, fat added in cooking, NS as to type of fat*
71103150	Potato, boiled, from fresh, peel eaten, made with margarine*
71103310	Potato, canned, fat added in cooking, NS as to type of fat*
71104030	Potato, roasted, NFS*
71104040	Potato, roasted, from fresh, peel eaten, NS as to fat added in cooking*
71104090	Potato, roasted, from fresh, peel eaten, made with margarine*
71104150	Potato, roasted, from fresh, peel not eaten, made with margarine*
71104200	Potato, roasted, ready-to-heat*
71301020	White potato, cooked, with cheese*
71301120	White potato, cooked, with ham and cheese*
71305010	White potato, scalloped*
71305015	Potato, scalloped, NFS*
71305020	Potato, scalloped, from fast food or restaurant*
71305030	Potato, scalloped, from fresh*
71305040	Potato, scalloped, from fresh, with meat*
71305050	Potato, scalloped, from dry mix*
71305070	Potato, scalloped, ready-to-heat*
71305110	White potato, scalloped, with ham*
71501000	Potato, mashed, NFS*
71501010	Potato, mashed, from fresh, made with milk*
71501011	Potato, mashed, from fresh, made with milk, with cheese*
71501012	Potato, mashed, from fresh, made with milk, with gravy*
71501013	Potato, mashed, from fresh, NFS*
71501016	Potato, mashed, from restaurant*
71501017	Potato, mashed, from restaurant, with gravy*
71501018	Potato, mashed, from school lunch*
71501020	White potato, from fresh, mashed, made with milk and fat*
71501025	White potato, from fresh, mashed, made with milk, and sour cream and/or cream cheese and fat*
71501030	White potato, from fresh, mashed, made with fat*
71501035	Potato, mashed, from dry mix, NFS*
71501040	Potato, mashed, from dry mix, made with milk*
71501045	Potato, mashed, from dry mix, made with milk, with cheese*
71501050	White potato, from fresh, mashed, made with milk, fat and cheese*
71501054	Potato, mashed, from dry mix, made with milk, with gravy*
71501055	White potato, from fresh, mashed, made with sour cream and/or cream cheese and fat*
71501060	White potato, from dry, mashed, made with milk, fat and egg*
71501300	White potato, from dry, mashed, NS as to milk or fat*
71501310	White potato, from fresh, mashed, NS as to milk or fat*
71507040	White potato, stuffed, baked, peel not eaten, stuffed with broccoli and cheese sauce*
71507050	White potato, stuffed, baked, peel not eaten, stuffed with meat in cream sauce*
71508000	White potato, stuffed, baked, peel eaten, NS as to topping*
71508050	White potato, stuffed, baked, peel eaten, stuffed with meat in cream sauce*
71508060	White potato, stuffed, baked, peel eaten, stuffed with bacon and cheese*
71508070	White potato, stuffed, baked, peel not eaten, stuffed with bacon and cheese*

Food code	Food description
71702000	Potato pudding*
71930090	Cassava, cooked, NS as to fat added in cooking*
71930120	Cassava, cooked, fat added in cooking, NS as to type of fat*
71945020	Yam buns; Puerto Rican style*
71970200	Fufu*
72101200	Beet greens, cooked, NS as to fat added in cooking*
72103060	Broccoli raab, cooked, made with margarine*
72107200	Collards, cooked, NS as to form, NS as to fat added in cooking*
72107201	Collards, cooked, from fresh, NS as to fat added in cooking*
72107202	Collards, cooked, from frozen, NS as to fat added in cooking*
72107203	Collards, cooked, from canned, NS as to fat added in cooking*
72107220	Collards, cooked, NS as to form, fat added in cooking, NS as to type of fat*
72107223	Collards, cooked, from canned, fat added in cooking, NS as to type of fat*
72118200	Greens, cooked, NS as to form, NS as to fat added in cooking*
72118201	Greens, cooked, from fresh, NS as to fat added in cooking*
72119200	Kale, cooked, NS as to form, NS as to fat added in cooking*
72119201	Kale, cooked, from fresh, NS as to fat added in cooking*
72122200	Mustard greens, cooked, NS as to form, NS as to fat added in cooking*
72122201	Mustard greens, cooked, from fresh, NS as to fat added in cooking*
72122203	Mustard greens, cooked, from canned, NS as to fat added in cooking*
72122229	Mustard greens, cooked, from fresh, made with margarine*
72125200	Spinach, cooked, NS as to form, NS as to fat added in cooking*
72125201	Spinach, cooked, from fresh, NS as to fat added in cooking*
72125214	Spinach, cooked, NS as to form, made with oil*
72125219	Spinach, cooked, from fresh, made with margarine*
72125220	Spinach, cooked, NS as to form, fat added in cooking, NS as to type of fat*
72125226	Spinach, cooked, from frozen, made with margarine*
72125229	Spinach, cooked, from canned, made with margarine*
72126001	Taro leaves, cooked, fat added in cooking*
72128200	Turnip greens, cooked, NS as to form, NS as to fat added in cooking*
72128203	Turnip greens, cooked, from canned, NS as to fat added in cooking*
72128221	Turnip greens, cooked, from fresh, fat added in cooking, NS as to type of fat*
72130199	Watercress, cooked, NS as to fat added in cooking*
72132199	Bitter melon leaves, horseradish leaves, jute leaves, or radish leaves, cooked, NS as to fat added in cooking*
72133199	Sweet potato leaves, squash leaves, pumpkin leaves, chrysanthemum leaves, bean leaves, or swamp cabbage, cooked, NS as to fat added in cooking*
72133201	Sweet potato leaves, squash leaves, pumpkin leaves, chrysanthemum leaves, bean leaves, or swamp cabbage, cooked, fat added in cooking*
72201200	Broccoli, cooked, NS as to form, NS as to fat added in cooking*
72201201	Broccoli, cooked, from fresh, NS as to fat added in cooking*
72201202	Broccoli, cooked, from frozen, NS as to fat added in cooking*
72201220	Broccoli, cooked, NS as to form, fat added in cooking, NS as to type of fat*
72201221	Broccoli, cooked, from fresh, fat added in cooking, NS as to type of fat*
72201222	Broccoli, cooked, from frozen, fat added in cooking, NS as to type of fat*
72201225	Broccoli, cooked, from fresh, made with margarine*
72201228	Broccoli, cooked, from frozen, made with margarine*
72203010	Broccoli, chinese, cooked, NS as to form, NS as to fat added in cooking*

Food code	Food description
73102200	Carrots, cooked, NS as to form, NS as to fat added in cooking*
73102201	Carrots, cooked, from fresh, NS as to fat added in cooking*
73102202	Carrots, cooked, from frozen, NS as to fat added in cooking*
73102219	Carrots, cooked, from fresh, made with margarine*
73102220	Carrots, cooked, NS as to form, fat added in cooking, NS as to type of fat*
73102221	Carrots, cooked, from fresh, fat added in cooking, NS as to type of fat*
73102226	Carrots, cooked, from frozen, made with margarine*
73102229	Carrots, cooked, from canned, made with margarine*
73103000	Carrots, canned, low sodium, NS as to fat added in cooking*
73103023	Carrots, canned, low sodium, made with margarine*
73111200	Peas and carrots, cooked, NS as to form, NS as to fat added in cooking*
73111203	Peas and carrots, cooked, from canned, NS as to fat added in cooking*
73111232	Peas and carrots, cooked, from frozen, made with margarine*
73111235	Peas and carrots, cooked, from canned, made with margarine*
73201000	Pumpkin, cooked, NS as to form, NS as to fat added in cooking*
73201020	Pumpkin, cooked, NS as to form, fat added in cooking, NS as to type of fat*
73210010	Calabaza, cooked*
73211110	Sweet potato and pumpkin casserole, Puerto Rican style*
73301000	Squash, winter type, mashed, NS as to fat or sugar added in cooking*
73303000	Squash, winter type, baked, NS as to fat or sugar added in cooking*
73305010	Squash, winter, baked with cheese*
73401000	Sweet potato, NFS*
73402000	Sweet potato, baked, peel eaten, NS as to fat added in cooking*
73402023	Sweet potato, baked, peel eaten, made with margarine*
73403000	Sweet potato, baked, peel not eaten, NS as to fat added in cooking*
73403023	Sweet potato, baked, peel not eaten, made with margarine*
73405000	Sweet potato, boiled, NS as to fat added in cooking*
73405020	Sweet potato, boiled, fat added in cooking, NS as to type of fat*
73405023	Sweet potato, boiled, made with margarine*
73406000	Sweet potato, candied*
73407000	Sweet potato, canned, NS as to fat added in cooking*
73407060	Sweet potato, canned, fat added in cooking*
74504000	Tomato and okra, cooked, NS as to fat added in cooking*
74504020	Tomato and okra, cooked, fat added in cooking, NS as to type of fat*
74504100	Tomato and onion, cooked, NS as to fat added in cooking*
74504120	Tomato and onion, cooked, fat added in cooking, NS as to type of fat*
75200100	Vegetables, NS as to type, cooked, NS as to fat added in cooking*
75200120	Vegetables, NS as to type, cooked, fat added in cooking, NS as to type of fat*
75201000	Artichoke, cooked, NS as to form, NS as to fat added in cooking*
75202000	Asparagus, cooked, NS as to form, NS as to fat added in cooking*
75202001	Asparagus, cooked, from fresh, NS as to fat added in cooking*
75202020	Asparagus, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75202021	Asparagus, cooked, from fresh, fat added in cooking, NS as to type of fat*
75202023	Asparagus, cooked, from canned, fat added in cooking, NS as to type of fat*
75202026	Asparagus, cooked, NS as to form, made with margarine*
75202029	Asparagus, cooked, from fresh, made with margarine*
75202036	Asparagus, cooked, from canned, made with margarine*
75204000	Beans, lima, immature, cooked, NS as to form, NS as to fat added in cooking*

Food code	Food description
75204002	Beans, lima, immature, cooked, from frozen, NS as to fat added in cooking*
75204003	Beans, lima, immature, cooked, from canned, NS as to fat added in cooking*
75204023	Beans, lima, immature, cooked, from canned, fat added in cooking, NS as to type of fat*
75204032	Beans, lima, immature, cooked, from frozen, made with margarine*
75204962	Beans, string, cooked, NS as to form, NS as to color, made with margarine*
75204965	Beans, string, cooked, from fresh, NS as to color, made with margarine*
75204971	Beans, string, cooked, from canned, NS as to color, made with margarine*
75204980	Beans, string, cooked, NS as to form, NS as to color, fat added in cooking, NS as to type of fat*
75204981	Beans, string, cooked, from fresh, NS as to color, fat added in cooking, NS as to type of fat*
75204982	Beans, string, cooked, from frozen, NS as to color, fat added in cooking, NS as to type of fat*
75205000	Beans, string, cooked, NS as to form, NS as to color, NS as to fat added in cooking*
75205001	Beans, string, cooked, from fresh, NS as to color, NS as to fat added in cooking*
75205003	Beans, string, cooked, from canned, NS as to color, NS as to fat added in cooking*
75205010	Beans, string, green, cooked, NS as to form, NS as to fat added in cooking*
75205011	Beans, string, green, cooked, from fresh, NS as to fat added in cooking*
75205012	Beans, string, green, cooked, from frozen, NS as to fat added in cooking*
75205013	Beans, string, green, cooked, from canned, NS as to fat added in cooking*
75205030	Beans, string, green, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75205031	Beans, string, green, cooked, from fresh, fat added in cooking, NS as to type of fat*
75205032	Beans, string, green, cooked, from frozen, fat added in cooking, NS as to type of fat*
75205033	Beans, string, green, cooked, from canned, fat added in cooking, NS as to type of fat*
75205043	Beans, string, green, cooked, NS as to form, made with margarine*
75205046	Beans, string, green, cooked, from fresh, made with margarine*
75205049	Beans, string, green, cooked, from frozen, made with margarine*
75205052	Beans, string, green, cooked, from canned, made with margarine*
75205110	Beans, string, green, canned, low sodium, NS as to fat added in cooking*
75205133	Beans, string, green, canned, low sodium, made with margarine*
75206010	Beans, string, yellow, cooked, NS as to form, fat not added in cooking*
75208000	Beets, cooked, NS as to form, NS as to fat added in cooking*
75208001	Beets, cooked, from fresh, NS as to fat added in cooking*
75209000	Brussels sprouts, cooked, NS as to form, NS as to fat added in cooking*
75209002	Brussels sprouts, cooked, from frozen, NS as to fat added in cooking*
75209021	Brussels sprouts, cooked, from fresh, fat added in cooking, NS as to type of fat*
75209032	Brussels sprouts, cooked, NS as to form, made with margarine*
75209052	Brussels sprouts, cooked, from frozen, made with margarine*
75211010	Cabbage, green, cooked, NS as to fat added in cooking*
75211030	Cabbage, green, cooked, fat added in cooking, NS as to type of fat*
75211033	Cabbage, green, cooked, made with margarine*
75212000	Cabbage, red, cooked, NS as to fat added in cooking*
75213100	Cactus, cooked, NS as to fat added in cooking*
75214000	Cauliflower, cooked, NS as to form, NS as to fat added in cooking*

Food code	Food description
75214001	Cauliflower, cooked, from fresh, NS as to fat added in cooking*
75214029	Cauliflower, cooked, from fresh, made with margarine*
75214032	Cauliflower, cooked, from frozen, made with margarine*
75215000	Celery, cooked, NS as to fat added in cooking*
75215100	Fennel bulb, cooked, NS as to fat added in cooking*
75215509	Christophine, cooked, NS as to fat added in cooking*
75215511	Christophine, cooked, fat added in cooking*
75216000	Corn, cooked, NS as to form, NS as to color, NS as to fat added in cooking*
75216001	Corn, cooked, from fresh, NS as to color, NS as to fat added in cooking*
75216002	Corn, cooked, from frozen, NS as to color, NS as to fat added in cooking*
75216003	Corn, cooked, from canned, NS as to color, NS as to fat added in cooking*
75216020	Corn, cooked, NS as to form, NS as to color, fat added in cooking, NS as to type of fat*
75216026	Corn, cooked, NS as to form, NS as to color, made with margarine*
75216033	Corn, cooked, from frozen, NS as to color, made with margarine*
75216036	Corn, cooked, from canned, NS as to color, made with margarine*
75216070	Corn, dried, cooked*
75216100	Corn, yellow, cooked, NS as to form, NS as to fat added in cooking*
75216101	Corn, yellow, cooked, from fresh, NS as to fat added in cooking*
75216102	Corn, yellow, cooked, from frozen, NS as to fat added in cooking*
75216103	Corn, yellow, cooked, from canned, NS as to fat added in cooking*
75216120	Corn, yellow, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75216121	Corn, yellow, cooked, from fresh, fat added in cooking, NS as to type of fat*
75216122	Corn, yellow, cooked, from frozen, fat added in cooking, NS as to type of fat*
75216123	Corn, yellow, cooked, from canned, fat added in cooking, NS as to type of fat*
75216133	Corn, yellow, cooked, NS as to form, made with margarine*
75216136	Corn, yellow, cooked, from fresh, made with margarine*
75216139	Corn, yellow, cooked, from frozen, made with margarine*
75216143	Corn, yellow, cooked, from canned, made with margarine*
75216163	Corn, yellow and white, cooked, from canned, NS as to fat added in cooking*
75216179	Corn, yellow and white, cooked, from fresh, made with margarine*
75216190	Corn, yellow, NS as to form, cream style, fat added in cooking*
75216193	Corn, yellow, from canned, cream style, fat added in cooking*
75216200	Corn, white, cooked, NS as to form, NS as to fat added in cooking*
75216202	Corn, white, cooked, from frozen, NS as to fat added in cooking*
75216226	Corn, white, cooked, NS as to form, made with margarine*
75216229	Corn, white, cooked, from fresh, made with margarine*
75216300	Corn, yellow, canned, low sodium, NS as to fat added in cooking*
75216323	Corn, yellow, canned, low sodium, made with margarine*
75216700	Cucumber, cooked, NS as to fat added in cooking*
75217000	Eggplant, cooked, NS as to fat added in cooking*
75217020	Eggplant, cooked, fat added in cooking, NS as to type of fat*
75217301	Flowers or blossoms of sesbania, squash, or lily, fat added in cooking*
75217490	Hominy, cooked, NS as to fat added in cooking*
75217520	Hominy, cooked, fat added in cooking*
75218011	Kohlrabi, cooked, fat added in cooking*
75218400	Leek, cooked, NS as to fat added in cooking*
75219000	Mushrooms, cooked, NS as to form, NS as to fat added in cooking*

Food code	Food description
75219001	Mushrooms, cooked, from fresh, NS as to fat added in cooking*
75219002	Mushrooms, cooked, from frozen, NS as to fat added in cooking*
75219020	Mushrooms, cooked, NS as to form, fat added in cooking, NS asa to type of fat*
75219021	Mushrooms, cooked, from fresh, fat added in cooking, NS as to type of fat*
75219035	Mushrooms, cooked, from fresh, made with margarine*
75219038	Mushrooms, cooked, from frozen, made with margarine*
75220000	Okra, cooked, NS as to form, NS as to fat added in cooking*
75220001	Okra, cooked, from fresh, NS as to fat added in cooking*
75220020	Okra, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75220033	Okra, cooked, from frozen, made with margarine*
75220049	Lettuce, cooked, NS as to fat added in cooking*
75220051	Lettuce, cooked, fat added in cooking*
75221000	Onions, cooked, NS as to form, NS as to fat added in cooking*
75221001	Onions, cooked, from fresh, NS as to fat added in cooking*
75221002	Onions, cooked, from frozen, NS as to fat added in cooking*
75221019	Onions, cooked, from fresh, made with margarine*
75221020	Onions, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75221040	Onions, green, cooked, NS as to form, NS as to fat added in cooking*
75221061	Onions, green, cooked, from fresh, fat added in cooking*
75222000	Parsnips, cooked, NS as to fat added in cooking*
75223003	Peas, cowpeas, field peas, or blackeye peas, not dried, cooked, from canned, NS as to fat added in cooking*
75224010	Peas, green, cooked, NS as to form, NS as to fat added in cooking*
75224011	Peas, green, cooked, from fresh, NS as to fat added in cooking*
75224012	Peas, green, cooked, from frozen, NS as to fat added in cooking*
75224013	Peas, green, cooked, from canned, NS as to fat added in cooking*
75224030	Peas, green, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75224048	Peas, green, cooked, from frozen, made with margarine*
75224051	Peas, green, cooked, from canned, made with margarine*
75224133	Peas, green, canned, low sodium, made with margarine*
75225014	Pigeon peas, cooked, NS as to form, NS as to fat added in cooking*
75225015	Pigeon peas, cooked, NS as to form, fat added in cooking*
75226000	Peppers, green, cooked, NS as to fat added in cooking*
75226020	Peppers, green, cooked, fat added in cooking, NS as to type of fat*
75226023	Peppers, green, cooked, made with margarine*
75226040	Peppers, red, cooked, NS as to fat added in cooking*
75226060	Peppers, red, cooked, fat added in cooking, NS as to type of fat*
75226090	Peppers, hot, cooked, NS as to form, NS as to fat added in cooking*
75226091	Peppers, hot, cooked, from fresh, NS as to fat added in cooking*
75226093	Peppers, hot, cooked, from canned, NS as to fat added in cooking*
75226110	Peppers, hot, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75226111	Peppers, hot, cooked, from fresh, fat added in cooking, NS as to type of fat*
75226112	Peppers, hot, cooked, from frozen, fat added in cooking, NS as to type of fat*
75228000	Rutabaga, cooked, NS as to fat added in cooking*
75230000	Sauerkraut, cooked, NS as to fat added in cooking*
75230020	Sauerkraut, cooked, fat added in cooking*
75231025	Snowpea, cooked, NS as to form, made with margarine*
75231031	Snowpea, cooked, from frozen, made with margarine*

Food code	Food description
75233000	Squash, summer, yellow or green, cooked, NS as to form, NS as to fat added in cooking*
75233001	Squash, summer, yellow or green, cooked, from fresh, NS as to fat added in cooking*
75233020	Squash, summer, yellow or green, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75233029	Squash, summer, yellow or green, cooked, from fresh, made with margarine*
75233223	Squash, spaghetti, cooked, made with margarine*
75234000	Turnip, cooked, NS as to form, NS as to fat added in cooking*
75301123	Beans, lima and corn, cooked, made with margarine*
75302009	Beans, string, green, with tomatoes, cooked, NS as to fat added in cooking*
75302011	Beans, string, green, with tomatoes, cooked, fat added in cooking*
75302200	Beans, string, green, with onions, NS as to fat added in cooking*
75302500	Beans, string, green, and potatoes, cooked, NS as to fat added in cooking*
75302513	Beans, string, green, and potatoes, cooked, made with margarine*
75303000	Corn with peppers, red or green, cooked, NS as to fat added in cooking*
75306999	Green peppers and onions, cooked, NS as to fat added in cooking*
75307000	Green peppers and onions, cooked, fat added in cooking, NS as to type of fat*
75307003	Green peppers and onions, cooked, made with margarine*
75311000	Mixed vegetables, cooked, NS as to form, NS as to fat added in cooking*
75311002	Mixed vegetables, cooked, from frozen, NS as to fat added in cooking*
75311003	Mixed vegetables, cooked, from canned, NS as to fat added in cooking*
75311020	Mixed vegetables, cooked, NS as to form, fat added in cooking, NS as to type of fat*
75311023	Mixed vegetables, cooked, from canned, fat added in cooking, NS as to type of fat*
75311026	Mixed vegetables, cooked, NS as to form, made with margarine*
75311029	Mixed vegetables, cooked, from frozen, made with margarine*
75311032	Mixed vegetables, cooked, from canned, made with margarine*
75311100	Mixed vegetables, canned, low sodium, NS as to fat added in cooking*
75315000	Peas and corn, cooked, NS as to fat added in cooking*
75315023	Peas and corn, cooked, made with margarine*
75315200	Peas and mushrooms, cooked, NS as to fat added in cooking*
75315305	Peas and potatoes, cooked, NS as to fat added in cooking*
75315999	Squash, summer, yellow or green, and onions, cooked, NS as to fat added in cooking*
75316024	Squash, summer, yellow or green, and onions, cooked, made with margarine*
75316031	Squash, summer, yellow or green, with tomato sauce, cooked, fat added in cooking*
75316032	Squash, summer, yellow or green, with tomato sauce, cooked, NS as to fat added in cooking*
75317000	Vegetables, stew type, cooked, NS as to fat added in cooking*
75317010	Vegetables, stew type, cooked, fat added in cooking, NS as to type of fat*
75330100	Vegetable combination, including carrots, broccoli, and/or dark-green leafy; cooked, no sauce, NS as to fat added in cooking*
75330123	Vegetable combination, including carrots, broccoli, and/or dark-green leafy; cooked, no sauce, made with margarine*
75330130	Vegetable combination, excluding carrots, broccoli, and dark-green leafy; cooked, no sauce, NS as to fat added in cooking*

Food code	Food description
75330153	Vegetable combination, excluding carrots, broccoli, and dark-green leafy; cooked, no sauce, made with margarine*
75340000	Vegetable combinations, Asian style, broccoli, green pepper, water chestnut, etc., cooked, NS as to fat added in cooking*
75340020	Vegetable combinations, Asian style, broccoli, green pepper, water chestnut, etc., cooked, fat added in cooking, NS as to type of fat*
75340160	Vegetable and pasta combinations with cream or cheese sauce, broccoli, pasta, carrots, corn, zucchini, peppers, cauliflower, peas, etc., cooked*
75411010	Corn, scalloped or pudding*
75411020	Corn fritter*
75414020	Mushrooms, stuffed*
75450600	Vegetable combination, including carrots, broccoli, and/or dark-green leafy; cooked, with butter sauce*
75460700	Vegetable combinations, including carrots, broccoli, and/or dark-green leafy; cooked, with pasta*
75460710	Vegetable combinations, excluding carrots, broccoli, and dark-green leafy; cooked, with pasta*
75460810	Vegetable combinations, excluding carrots, broccoli, and dark-green leafy; cooked, with butter sauce and pasta*
77316010	Stuffed cabbage, with meat, Puerto Rican style*
81100000	Table fat, NFS*
81102000	Margarine, NFS
81102010	Margarine, stick, salted
81102020	Margarine, tub, salted
81103020	Margarine, whipped, tub, salted
81103030	Margarine, stick, unsalted
81103040	Margarine-like spread, stick, salted
81103041	Margarine-like spread, made with yogurt, stick, salted
81103060	Margarine, tub, unsalted
81103080	Margarine-like spread, tub, salted
81103090	Margarine-like spread, liquid, salted
81103140	Margarine-like spread, tub, sweetened
81104010	Margarine-like spread, reduced calorie, about 40% fat, tub, salted
81104011	Margarine like spread, reduced calorie, about 40% fat, made with yogurt, tub, salted
81104020	Margarine-like spread, reduced calorie, about 40% fat, stick, salted
81104050	Margarine like spread, reduced calorie, about 20% fat, tub, salted
81104100	Margarine like spread, fat free, tub, salted
81104110	Margarine like spread, fat free, liquid, salted
81104510	Vegetable oil-butter spread, tub, salted
81104560	Vegetable oil-butter spread, reduced calorie, tub, salted
81105010	Butter-margarine blend, stick, salted*
81105020	Butter-margarine blend, tub, salted
81105500	Butter-vegetable oil blend
91735000	Pralines*
Salad dressings	
11440010	Chipotle dip, yogurt based*
11440020	Dill dip, yogurt based*
11440040	Ranch dip, yogurt based*

Food code	Food description
11440050	Spinach dip, yogurt based*
11440070	Vegetable dip, yogurt based*
12350000	Dip, sour cream base*
12350010	Dip, NFS*
12350100	Spinach dip*
12350110	Spinach and artichoke dip*
12350200	Chipotle dip, regular*
12350210	Dill dip, regular*
12350220	Onion dip, regular*
12350225	Onion dip, light*
12350230	Ranch dip, regular*
12350235	Ranch dip, light*
12350240	Spinach dip, regular*
12350245	Spinach dip, light*
12350250	Vegetable dip, regular*
12350255	Vegetable dip, light*
14620100	Dip, cream cheese base*
14620110	Artichoke dip*
14620115	Spinach and artichoke dip*
14620120	Shrimp dip, cream cheese base*
14620130	Seafood dip*
14640026	Cheese sandwich, American cheese, on white bread, with mayonnaise*
14640028	Cheese sandwich, American cheese, on wheat bread, with mayonnaise*
14640030	Cheese sandwich, American cheese, on whole wheat bread, with mayonnaise*
14640032	Cheese sandwich, Cheddar cheese, on white bread, with mayonnaise*
14640034	Cheese sandwich, Cheddar cheese, on wheat bread, with mayonnaise*
14640036	Cheese sandwich, Cheddar cheese, on whole wheat bread, with mayonnaise*
14640046	Cheese sandwich, reduced fat Cheddar cheese, on wheat bread, with mayonnaise*
14640048	Cheese sandwich, reduced fat Cheddar cheese, on whole wheat bread, with mayonnaise*
14670000	Mozzarella cheese, tomato, and basil, with oil and vinegar dressing*
27220080	Ham croquette*
27246300	Chicken or turkey cake, patty, or croquette*
27250040	Crab cake*
27250070	Salmon cake or patty*
27250160	Tuna cake or patty*
27250400	Shrimp cake or patty*
27416250	Beef salad*
27420020	Ham or pork salad*
27446200	Chicken or turkey salad, made with mayonnaise*
27446205	Chicken or turkey salad with nuts and/or fruits*
27446220	Chicken or turkey salad with egg*
27446225	Chicken or turkey salad, made with light mayonnaise*
27446230	Chicken or turkey salad, made with mayonnaise-type salad dressing*
27446235	Chicken or turkey salad, made with light mayonnaise-type salad dressing*
27446240	Chicken or turkey salad, made with creamy dressing*
27446260	Chicken or turkey salad, made with any type of fat free dressing*
27450010	Crab salad*

Food code	Food description
27450020	Lobster salad*
27450030	Salmon salad*
27450060	Tuna salad, made with mayonnaise*
27450061	Tuna salad, made with light mayonnaise*
27450062	Tuna salad, made with mayonnaise-type salad dressing*
27450063	Tuna salad, made with light mayonnaise-type salad dressing*
27450064	Tuna salad, made with creamy dressing*
27450065	Tuna salad, made with light creamy dressing*
27450066	Tuna salad, made with Italian dressing*
27450068	Tuna salad, made with any type of fat free dressing*
27450070	Shrimp salad*
27450080	Seafood salad*
27450090	Tuna salad with cheese*
27450100	Tuna salad with egg*
27450130	Crab salad made with imitation crab*
27500050	Sandwich, NFS*
27510145	Cheeseburger, 1 miniature patty, with condiments, on miniature bun, from fast food / restaurant*
27510171	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Burger King WHOPPER Jr. with cheese)*
27510175	Cheeseburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Wendy's Jr. Cheeseburger Deluxe)*
27510205	Cheeseburger, 1 small patty, with condiments, on white bun*
27510206	Cheeseburger, 1 small patty, with condiments, on wheat bun*
27510207	Cheeseburger, 1 small patty, with condiments, on whole wheat bun*
27510220	Cheeseburger, with mayonnaise or salad dressing, on bun*
27510230	Cheeseburger, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510250	Cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing, on bun*
27510251	Cheeseburger, 1 medium patty, with condiments, on white bun*
27510252	Cheeseburger, 1 medium patty, with condiments, on wheat bun*
27510253	Cheeseburger, 1 medium patty, with condiments, on whole wheat bun*
27510266	Cheeseburger, 1 large patty, with condiments, on bun, from fast food / restaurant*
27510280	Double cheeseburger (2 patties), with mayonnaise or salad dressing, on bun*
27510300	Double cheeseburger (2 patties), with mayonnaise or salad dressing, on double-decker bun*
27510340	Double cheeseburger (2 patties), with mayonnaise or salad dressing and tomatoes and/or catsup, on bun*
27510341	Bacon cheeseburger, 1 medium patty, with condiments, on white bun*
27510342	Bacon cheeseburger, 1 medium patty, with condiments, on wheat bun*
27510343	Bacon cheeseburger, 1 medium patty, with condiments, on whole wheat bun*
27510346	Bacon cheeseburger, 1 large patty, with condiments, on bun, from fast food / restaurant*
27510350	Cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510355	Cheeseburger, 1/3 lb meat, with mayonnaise or salad dressing, tomato and/or catsup on bun*

Food code	Food description
27510359	Cheeseburger, 1/3 lb meat, with mayonnaise or salad dressing, and mushrooms, on bun*
27510360	Bacon cheeseburger, with mayonnaise or salad dressing, tomato and/or catsup, on bun*
27510370	Double cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing, on bun*
27510380	Triple cheeseburger (3 patties, 1/4 lb meat each), with mayonnaise or salad dressing and tomatoes and/or catsup, on bun*
27510385	Double bacon cheeseburger (2 patties), with tomato and/or catsup, on bun*
27510425	Double bacon cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing, on bun*
27510430	Double bacon cheeseburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510431	Double bacon cheeseburger, 2 small patties, with condiments, on bun, from fast food / restaurant (Burger King Bacon Double Cheeseburger)*
27510435	Double bacon cheeseburger (2 patties,1/3 lb meat each), with mayonnaise or salad dressing, on bun*
27510440	Bacon cheeseburger, 1/4 lb meat, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510451	Double bacon cheeseburger, 2 medium patties, with condiments, on bun, from fast food / restaurant*
27510465	Double bacon cheeseburger, 2 medium patties, with condiments, on bun, from fast food / restaurant (Wendy's Baconator)*
27510506	Hamburger, 1 miniature patty, with condiments, on miniature bun, from fast food / restaurant*
27510520	Hamburger, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510552	Hamburger, 1 small patty, with condiments, on bun, from fast food / restaurant (Burger King WHOPPER Jr.)*
27510560	Hamburger, 1/4 lb meat, with mayonnaise or salad dressing, and tomato and/or catsup, on bun*
27510585	Hamburger, 1 small patty, with condiments, on white bun*
27510587	Hamburger, 1 small patty, with condiments, on whole wheat bun*
27510641	Hamburger, 1 medium patty, with condiments, on white bun*
27510642	Hamburger, 1 medium patty, with condiments, on wheat bun*
27510643	Hamburger, 1 medium patty, with condiments, on whole wheat bun*
27510667	Double hamburger, 2 small patties, with condiments, on bun, from fast food / restaurant*
27510670	Double hamburger (2 patties), with mayonnaise or salad dressing and tomatoes, on bun*
27510690	Double hamburger (2 patties, 1/4 lb meat each), with mayonnaise or salad dressing and tomatoes and/or catsup, on double-decker bun*
27510950	Reuben sandwich, corned beef sandwich with sauerkraut and cheese, with spread*
27513040	Roast beef submarine sandwich, with lettuce, tomato and spread*
27513041	Roast beef submarine sandwich, with cheese, lettuce, tomato and spread*
27517000	Wrap sandwich filled with beef patty, cheese and spread and/or sauce*
27517010	Wrap sandwich filled with beef patty, cheese, tomato and/or catsup, and spread and/or sauce*
27520150	Bacon, lettuce, and tomato sandwich with spread*
27520156	Bacon, lettuce, tomato, and cheese submarine sandwich, with spread*

Food code	Food description
27520160	Bacon, chicken, and tomato club sandwich, on multigrain roll with lettuce and spread*
27520165	Bacon, breaded fried chicken fillet, and tomato club with lettuce and spread*
27520300	Ham sandwich, with spread*
27520320	Ham and cheese sandwich, with lettuce and spread*
27520350	Ham and cheese sandwich, with spread, grilled*
27520370	Hot ham and cheese sandwich, on bun*
27540110	Chicken sandwich, with spread*
27540111	Chicken sandwich, with cheese and spread*
27540120	Chicken salad or chicken spread sandwich*
27540170	Chicken patty sandwich, miniature, with spread*
27540240	Chicken fillet, broiled, sandwich, on whole wheat roll, with lettuce, tomato and spread*
27540295	Buffalo chicken submarine sandwich*
27540296	Buffalo chicken submarine sandwich with cheese*
27540361	Turkey and bacon submarine sandwich, with cheese, lettuce, tomato and spread*
27541000	Turkey, ham, and roast beef club sandwich, with lettuce, tomato and spread*
27545010	Turkey or chicken burger, with condiments, on bun, from fast food / restaurant*
27545200	Turkey or chicken burger, with condiments, on white bun*
27545210	Turkey or chicken burger, with condiments, on wheat bun*
27545220	Turkey or chicken burger, with condiments, on whole wheat bun*
27550720	Tuna salad sandwich*
27560500	Pepperoni and salami submarine sandwich, with lettuce, tomato and spread*
27570310	Hors d'oeuvres, with spread*
32102000	Egg, deviled*
32103000	Egg salad, made with mayonnaise*
32103015	Egg salad, made with light mayonnaise*
32103020	Egg salad, made with mayonnaise-type salad dressing*
32103025	Egg salad, made with light mayonnaise-type salad dressing*
32103035	Egg salad, made with light creamy dressing*
32103050	Egg Salad, made with any type of fat free dressing*
32202025	Egg, cheese and ham on bagel*
41203030	Black bean salad*
58134640	Tortellini, cheese-filled, meatless, with vinaigrette dressing*
58148110	Macaroni or pasta salad, made with mayonnaise*
58148111	Macaroni or pasta salad, made with light mayonnaise*
58148112	Macaroni or pasta salad, made with mayonnaise-type salad dressing*
58148114	Macaroni or pasta salad, made with Italian dressing*
58148115	Macaroni or pasta salad, made with light Italian dressing*
58148117	Macaroni or pasta salad, made with light creamy dressing*
58148118	Macaroni or pasta salad, made with any type of fat free dressing*
58148120	Macaroni or pasta salad with egg*
58148130	Macaroni or pasta salad with tuna*
58148140	Macaroni or pasta salad with crab meat*
58148150	Macaroni or pasta salad with shrimp*
58148160	Macaroni or pasta salad with tuna and egg*
58148170	Macaroni or pasta salad with chicken*
58148180	Macaroni or pasta salad with cheese*

Food code	Food description
58148550	Macaroni or pasta salad with meat*
63401010	Apple salad with dressing*
63402950	Fruit salad, excluding citrus fruits, with salad dressing or mayonnaise*
63402980	Fruit salad, excluding citrus fruits, with marshmallows*
63403010	Fruit salad, including citrus fruits, with salad dressing or mayonnaise*
63403040	Fruit salad, including citrus fruits, with marshmallows*
71600950	Potato salad with egg, from restaurant*
71601015	Potato salad with egg, made with light mayonnaise*
71601020	Potato salad with egg, made with mayonnaise-type salad dressing*
71601025	Potato salad with egg, made with light mayonnaise-type salad dressing*
71601035	Potato salad with egg, made with light creamy dressing*
71601040	Potato salad with egg, made with Italian dressing*
71601050	Potato salad with egg, made with any type of fat free dressing*
71602950	Potato salad, from restaurant*
71603010	Potato salad, made with mayonnaise*
71603015	Potato salad, made with light mayonnaise*
71603020	Potato salad, made with mayonnaise-type salad dressing*
71603025	Potato salad, made with light mayonnaise-type salad dressing*
71603030	Potato salad, made with creamy dressing*
71603040	Potato salad, made with Italian dressing*
71603050	Potato salad, made with any type of fat free dressing*
73101110	Carrots, raw, salad*
73101210	Carrots, raw, salad with apples*
75140500	Broccoli salad with cauliflower, cheese, bacon bits, and dressing*
75140510	Broccoli slaw salad*
75141000	Cabbage salad or coleslaw, made with coleslaw dressing*
75141005	Cabbage salad or coleslaw, made with light coleslaw dressing*
75141020	Cabbage salad or coleslaw, made with Italian dressing*
75141025	Cabbage salad or coleslaw, made with light Italian dressing*
75141030	Cabbage salad or coleslaw, made with creamy dressing*
75141040	Cabbage salad or coleslaw, made with any type of fat free dressing*
75141100	Cabbage salad or coleslaw with apples and/or raisins, with dressing*
75141200	Cabbage salad or coleslaw with pineapple, with dressing*
75142500	Cucumber salad, made with sour cream dressing*
75142550	Cucumber salad, made with Italian dressing*
75302080	Bean salad, yellow and/or green string beans*
75416600	Pea salad with cheese*
81302040	Sandwich spread
81302050	Tartar sauce
83100100	Salad dressing, NFS, for salads
83100200	Salad dressing, NFS, for sandwiches
83101000	Blue or roquefort cheese dressing
83102000	Caesar dressing
83103000	Coleslaw dressing
83104000	French or Catalina dressing
83105500	Honey mustard dressing
83106000	Italian dressing, made with vinegar and oil
83107000	Mayonnaise, regular

Food code	Food description
83108000	Mayonnaise, imitation
83109000	Russian dressing
83110000	Mayonnaise-type salad dressing
83112000	Avocado dressing
83112500	Creamy dressing
83112950	Poppy seed dressing
83112990	Sesame dressing
83114000	Thousand Island dressing
83115000	Yogurt dressing
83200100	Salad dressing, light, NFS
83201000	Blue or roquefort cheese dressing, light
83201400	Coleslaw dressing, light
83202020	French or Catalina dressing, light
83203000	Caesar dressing, light
83204000	Mayonnaise, light
83204030	Mayonnaise, reduced fat, with olive oil
83204050	Mayonnaise-type salad dressing, light
83204500	Honey mustard dressing, light
83205450	Italian dressing, light
83206500	Sesame dressing, light
83207000	Thousand Island dressing, light
83210100	Creamy dressing, light
83300100	Blue or roquefort cheese dressing, fat free
83300200	Caesar dressing, fat free
83300300	Creamy dressing, fat free
83300400	French or Catalina dressing, fat free
83300500	Honey mustard dressing, fat free
83300600	Italian dressing, fat free
83300700	Mayonnaise, fat free
83300900	Salad dressing, fat free, NFS
83301000	Thousand Island dressing, fat free
Meat products	
Meat patty with soy protein	
21540100	Ground beef with textured vegetable protein, cooked
Processed fruits and fruit juices	
Fruit juice	
27116300	Beef with sweet and sour sauce*
27120060	Sweet and sour pork*
27150170	Sweet and sour shrimp*
28143200	Chicken in soy-based sauce, rice and vegetables, frozen meal*
28143210	Chicken in orange sauce with almond rice, diet frozen meal*
42403010	Coconut water, unsweetened
42404010	Coconut water, sweetened
53452200	Pastry, Italian, with cheese*
55207000	Waffle, multi-bran*
61119020	Orange, sections, canned, juice pack*
61201010	Grapefruit juice, 100%, freshly squeezed

Food code	Food description
61201020	Grapefruit juice, 100%, NS as to form
61201220	Grapefruit juice, 100%, canned, bottled or in a carton
61201225	Grapefruit juice, 100%, with calcium added
61204000	Lemon juice, 100%, NS as to form
61204200	Lemon juice, 100%, canned or bottled
61207000	Lime juice, 100%, NS as to form
61207200	Lime juice, 100%, canned or bottled
61210000	Orange juice, 100%, NFS
61210220	Orange juice, 100%, canned, bottled or in a carton
61210250	Orange juice, 100%, with calcium added, canned, bottled or in a carton
61210620	Orange juice, 100%, frozen, reconstituted
61210820	Orange juice, 100%, with calcium added, frozen, reconstituted
61213220	Tangerine juice, 100%
61213800	Fruit juice blend, citrus, 100% juice
61213900	Fruit juice blend, citrus, 100% juice, with calcium added
64100100	Fruit juice, NFS
64100110	Fruit juice blend, 100% juice
64100200	Cranberry juice blend, 100% juice
64100220	Cranberry juice blend, 100% juice, with calcium added
64101010	Apple cider
64104010	Apple juice, 100%
64104030	Apple juice, 100%, with calcium added
64104600	Blackberry juice, 100%
64105400	Cranberry juice, 100%, not a blend
64116020	Grape juice, 100%
64116060	Grape juice, 100%, with calcium added
64120010	Papaya juice, 100%
64121000	Passion fruit juice, 100%
64124020	Pineapple juice, 100%
64126000	Pomegranate juice, 100%
64132010	Prune juice, 100%
64132500	Strawberry juice, 100%
64133100	Watermelon juice, 100%
75200700	Aloe vera juice drink
78101000	Vegetable and fruit juice, 100% juice, with high vitamin C
91361020	Fruit sauce*
91550300	Pineapple custard, Puerto Rican style*
92432000	Fruit juice drink, citrus, carbonated*
92433000	Fruit juice drink, noncitrus, carbonated*
92510610	Fruit juice drink
92510650	Tamarind drink
92510720	Fruit punch, made with fruit juice and soda*
92510730	Fruit punch, made with soda, fruit juice, and sherbet or ice cream*
92510955	Lemonade, fruit juice drink
92530510	Cranberry juice drink, with high vitamin C
92530610	Fruit juice drink, with high vitamin C
92530950	Vegetable and fruit juice drink, with high vitamin C
92531030	Fruit juice drink (Sunny D)

Food code	Food description
92550030	Fruit juice drink, with high vitamin C, light
92550035	Fruit juice drink, light
92550040	Fruit juice drink, diet
92550110	Cranberry juice drink, with high vitamin C, light
92550200	Grape juice drink, light*
92550350	Orange juice beverage, 40-50% juice, light
92550360	Apple juice beverage, 40-50% juice, light
92550370	Lemonade, fruit juice drink, light
92550380	Pomegranate juice beverage, 40-50% juice, light
92550400	Vegetable and fruit juice drink, with high vitamin C, diet
92550405	Vegetable and fruit juice drink, with high vitamin C, light
92552030	Fruit juice drink (Capri Sun)
92582100	Fruit juice drink, with high vitamin C, plus added calcium
92582110	Fruit juice drink, added calcium (Sunny D)
92612010	Sugar cane beverage
92801000	Wine, nonalcoholic
93301032	Cape Cod*
93301075	Greyhound*
93301111	Martini, flavored*
93301115	Mimosa*
93301132	Orange Blossom*
93301140	Screwdriver*
93301141	Seabreeze*
93301200	Pina Colada*
93301270	Fruit punch, alcoholic*
93301275	Champagne punch*
93301310	Mai Tai*
93301320	Tequila Sunrise*
95341000	FUZE Slenderize fortified low calorie fruit juice beverage
95342000	Fruit juice, acai blend
Fruit nectars	
64200100	Fruit nectar, NFS
64201010	Apricot nectar
64201500	Banana nectar
64202010	Cantaloupe nectar
64203020	Guava nectar
64204010	Mango nectar
64205010	Peach nectar
64210010	Papaya nectar
64215010	Pear nectar
64221010	Soursop, nectar
Fruit-flavored drinks	
92307520	Iced Tea / Lemonade juice drink, diet*
92510960	Lemonade, fruit flavored drink
92511015	Fruit flavored drink
92512040	Frozen daiquiri mix, frozen concentrate, not reconstituted**
92512090	Pina Colada, nonalcoholic
92512110	Margarita mix, nonalcoholic

Food code	Food description
92513000	Fruit flavored smoothie drink, frozen, no dairy
92513010	Fruit flavored smoothie drink, frozen, light, no dairy
92530410	Fruit flavored drink, with high vitamin C
92541010	Fruit flavored drink, powdered, reconstituted
92542000	Fruit flavored drink, with high vitamin C, powdered, reconstituted
92550610	Fruit flavored drink, with high vitamin C, diet
92550620	Fruit flavored drink, diet
92552000	Fruit flavored drink, with high vitamin C, powdered, reconstituted, diet
92552010	Fruit flavored drink, powdered, reconstituted, diet
92552020	Fruit juice drink, reduced sugar (Sunny D)
92804000	Shirley Temple
92900110	Fruit flavored drink, powdered, not reconstituted**
92900200	Fruit flavored drink, powdered, not reconstituted, diet**

* Only the proportion of the food corresponding to the existing GRAS uses of rice protein was included in the assessment of dietary intake.

** Non-reconstituted amount adjusted to the prepared amount.

Appendix D. PubMed Literature Searches

Date	Search terms	Hits
1/1/2019	Search (rice) AND (allerg* OR "Allergens") Filters: Publication date from 2015/01/01 to 2019/12/31; English	107
4/1/2020	Search (rice) AND (allergy OR allergen*) Filters: Publication date from 2019/01/01 to 2020/12/31; English	129
1/1/2019	Search (rice) AND (intake or diet) AND (safe OR toxic OR toxicity OR adverse) Filters: Publication date from 2015/01/01 to 2019/12/31; English	326
4/1/2020	Search (rice) AND (intake or diet) AND (safe OR toxic OR toxicity OR adverse) Filters: Publication date from 2019/01/01 to 2020/12/31; English	95
1/1/2019	Search ("rice protein") AND (safe OR toxic OR toxicity OR adverse) Filters: Publication date from 2015/01/01 to 2019/12/31; English	8
4/1/2020	Search ("rice protein") AND (safe OR toxic OR toxicity OR adverse) Filters: Publication date from 2019/01/01 to 2020/12/31; English	4
1/1/2019	Search ("rice protein") AND (intake OR diet) Filters: Publication date from 2015/01/01 to 2019/12/31; English	9
4/1/2020	Search ("rice protein") AND (intake OR diet) Filters: Publication date from 2019/01/01 to 2020/12/31; English	9
4/16/2019	protein[tiab] AND (children OR child) AND ("meta-analysis"[tiab] OR "systematic review"[tiab]) AND (diet OR dietary OR intake OR consumption) Filters: Publication Date 2002/01/01 to 2019/12/31; English	119
4/2/2020	protein[tiab] AND (children OR child) AND ("meta-analysis"[tiab] OR "systematic review"[tiab]) AND (diet OR dietary OR intake OR consumption) Filters: Publication Date 2019/01/01 to 2020/12/31; English	23

Appendix E. Goodman's Report and Appendix

STUDY TITLE

Evaluation of Potential Risks of Allergenicity for Rice Protein Hydrolysate

AUTHOR

Richard E. Goodman

STUDY COMPLETED ON

19 February 2020

PERFORMING LABORATORY

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LABORATORY STUDY ID

REG-2020-PeptAIde

SUMMARY

BASF asked me to evaluate potential risks of food allergy from their rice protein preparations that included PeptAIde, a concentrated rice protein hydrolysate and protein concentrate, prior to undergoing hydrolyzation. The original questions were to perform a digestion assay in pepsin and also to do an overall literature search for food allergy risks of rice.

The PeptAIde protein sample was supplied as a powder, along with another sample protein concentrate prior to hydrolyzation (referred to as protein concentrate). Samples of each were solubilized in 1 x PBS (phosphate buffered saline, pH 7.4). Sample total protein of solutions were measured in a Lowry assay, which did not work due to sample color absorbance. Therefore, nanodrop and 2D Quant were both used to estimate protein concentrations. Samples were diluted and three concentrations were loaded on SDS-PAGE gels with reducing agent (beta-mercaptoethanol). After separation the proteins were stained with Coomassie Blue R250. The results on the first gels showed sample smearing from very high molecular weight to low. Both the PeptAIde and 80% rice protein was a smear from the wells through the running front, although PeptAIde was much darker in staining. A Jasmine rice sample was also run at the same concentrations and it showed a number of heavy clear bands from approximately 15 kDa to >100 kDa. The gel was repeated in January 2020 and showed the same effect. BASF shared results from a study performed by RSSL of their product and similar results were noted for PeptAIde. A decision was made that the standard pepsin digestion assay (Ofori-Anti et al., 2008) could not be conducted as there are no individual bands that are visible in the solubilized material, and there is no practical way to read the results.

The literature search was conducted on PubMed of the NCBI database searching for studies of food allergy to rice. Search criteria were key words “rice” AND “food” AND “allergen”. Over 200 articles were found and abstracts were reviewed before selecting 24 papers for review. Some papers focused on Food Protein Induced Enterocolitis (FPIES), a few on IgE mediated allergy. The search term “allergen” was changed to “allergy”, with similar results. A third search with “anaphylaxis” identified a few different articles with lipid transfer protein as the primary target. The prevalence of FPIES is quite low compared to IgE mediated allergy from all sources. In FPIES no protein targets have been identified. Sometimes IgE mediated allergic reactions do happen along with the general conditions of FPIES (diarrhea, vomit, abdominal pain, projectile vomiting or weight loss). The IgE mediated food allergic reactions to rice are and have limited direct proof except in a few cases where Lipid Transfer Proteins (LTPs) have been involved. From the WHO/IUIS Allergen.org database, there are only two proteins from rice recognized as allergens; Ory s 1, a beta-expansin that elongates pollen tubes and maybe stem expansion, and Ory s 12, a profilin, primarily as airway allergens. The AllergenOnline.org database lists a few more rice proteins and gives references. It includes the Ory s 1, but not the Ory s 12 protein. It also lists Glyoxalase I, a putative polcalcin homologue of Phl p 7 and fifteen alpha-amylase inhibitors. The rice LTP has not been cloned and tested as a pure protein, only rice extract inhibition of binding to peach. The evidence of the prevalence of food allergy to rice is sparse and reactions are usually quite mild. It does not fit the criteria for containment as an allergenic

source under FALCPA in the USA, or similar laws in the EU or Australia. All foods made with PeptAIde should be labeled as “rice” in the ingredient list to protect rice allergic consumers.

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Signature:

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Abbreviations

BAT	Basophil activation test
CODEX	CODEX Alimentarius Commission Guideline on food safety
FALCPA	Food allergen labelling and consumer protection act (US law in 2004)
FPIES	Food protein induced enterocolitis syndrome
GRAS	Generally Recognized as Safe
kDa	Kilodaltons
IgE	Immunoglobulin E
LTP	Lipid transfer protein
MW	Molecular weight
PBS	Phosphate buffered saline
PeptAIde	Processed rice product of BASF SE
SDS-PAGE	Sodium dodecyl sulfate polyacrylamide gel electrophoresis
SPT	Skin prick test
vDC	Volts direct current

1. Introduction

BASF SE has developed a rice food ingredient of high protein content that is intended for safe food consumer products. The process includes concentration of rice proteins and hydrolysis. The company is interested in having a GRAS (Generally Recognized as Safe) evaluation and approval of this product for sale in the US. The CODEX Alimentarius Commission Guideline on evaluation of potential allergenicity of Genetically Engineered Crops has become a model for evaluating novel dietary proteins for food and even in some cases, novel foods such as algae, or fungi and certain new foods such as the Impossible Foods burger with the novel soybean leghemoglobulin gene and protein have been evaluated that way (Jin et al., 2018). The source of the gene or protein is considered for risks of allergy by verifiable literature research. Any specific proteins are evaluated by literature research and also by bioinformatics comparisons to known allergens using a curated allergen database, such as www/allergenonline.org (Goodman et al., 2016). If there are significant amino acid sequence identity matches to allergens, specific serum IgE tests may be useful, or if the gene and protein source is allergenic, then tests for those allergic to the source. In addition, a digestion assay is performed using a standardized protocol with the stomach enzyme, pepsin as the digestion enzyme (Astwood et al., 1996; Thomas et al., 2004; Ofori-Anti, et al., 2008; Jin et al., 2018).

The questions related to food allergy focus on being able to inform consumers of risks of food allergy that are relevant for their allergic profile and fall within regulations relating to ingredient lists. If consumers are allergic to peanut, the food must be labeled clearly as containing peanut to allow them to avoid consuming peanut. The companies must follow appropriate procedures to make sure the foods are appropriately made and labeled. In the United States, all food ingredients must be labeled and the source of a food that contains sources that provide a lower risk of allergy than the major allergenic eight foods must still be labeled as to the source organism.

The evaluation process that is normally followed for GRAS evaluations are similar to that outlined by the CODEX Guideline in 2003 for foods made with crops developed through biotechnology. The process evaluates:

- The allergenicity of the source organism based on published information.
- Evaluation of any new proteins with comparisons to allergens from other sources, using bioinformatics searches against a peer reviewed allergen database.
- Consideration of the stability of the protein(s) to digestion in an in vitro pepsin digestion model.
- Consideration of the abundance of any new proteins.

For this PeptAIde product, I agreed to do an evaluation of stability of the rice protein mixture using a pepsin digestion assay outlined in Ofori-Anti et al. (2008) and conduct a literature search regarding food allergy triggered by rice.

2. Material.

BASF shipped samples of the PeptAIde (Product lot 50572136) and the 80% rice protein concentrate (Product Lot 50569009) to my lab at the University of Nebraska. Samples were labeled clearly. The PeptAIde was a slightly brownish colored powder. The concentrated rice protein was a white powder. These were stored at -20C. Extracts were made at a weight to volume extraction ratio of 1:5 in 1X Phosphate buffered saline, with parallel extracts in Laemmli buffer with reducing agent (beta-mercaptoethanol).

The PBS extracted material was tested for protein concentration using Lowry method and compared to nanodrop values. The results were quite different due to interference form color. The PeptAIde results indicated 44 mg/ml by Lowry and the concentrate was 1.2 mg/ml by Lowry. The Nanodrop was much higher, at 44 mg/ml for Lowry and 144 mg/ml for Nanodrop. The protein concentrations were then estimated by 2D Quant which uses trichloroacetic acid to precipitate the protein. The precipitates were then solubilized and the estimated concentrations for PeptAIde in PBS was estimated to be 1 mg/ml. The 80% protein concentrate was 6.8 mg/ml. A package of Jasmine rice was purchased from a local grocery and it was ground and extracted at a 1:5 weight to volume ratio using the same buffers. The concentration of protein was 2 mg/ml.

Samples were diluted to estimated loading in the SDS-PAGE gel at 10 micrograms and diluted to 1.0 micrographs and again to 0.1 micrograms per lane in 1X reducing Laemmli buffer. The samples were loaded in Novex SDS-PAGE gels after heating to 80°C and loading 20 microliters per lane. A BioRad Precision Plus marker lane was loaded at each end of the gel. Electrophoresis was carried out using standard protocol at 125 vDC until the blue dye was nearly off the gel. The gel was then stained with Sigma's Coomassie Brilliant Blue R250. Then destained in 10% acetic acid in 25% methanol. Images were captured using the UVP Imager in the lab.

3. Goodman Test results.

3.1 SDS-PAGE stained gel. Samples 1x Laemmli buffer. See Figure 1.

3.2 SDS-PAGE stained gel. Samples extracted in 1x PBS. See figure 2.

The results showed extremely dense smearing patterns from the sample well to the bottom of the gel for both Laemmli extract and the PBS extract of PeptAIde, especially at a loading of 10 ug per well. The lightest loading at 0.1 ug showed a faint smear with only a broad band at below 10 kDa.

The results for rice protein concentrate also showed a smear from the well to the bottom, with a modest band at 28-30 kDa and broad bands at 15 kDa and 10 kDa in the highest concentration wells.

Results from the Jasmine rice extract were much more defined with most of the protein being concentrated in multiple stained protein bands ranging in size from 100 kDa to 10 kDa. There was little smearing except in the highest concentration well. Clearly there is a dramatic difference in the proteins compared to uncooked, ground rice grain.

Based on the stained gel results, it appears that we are not able to perform the simple digestive fate model of stability of the rice proteins in pepsin, at least not looking for individual protein bands by stained gels. We discussed this with BASF and they sent us results from a study they had performed at the RSSL laboratory in the United Kingdom.

4. RSSL test results.

The report from RSSL provides additional data, but I was interested in their SDS-PAGE gel with replicates of product that shows the same kind of protein smearing that we saw in our work. The loading is not listed in the report. But it provides confirmation of our finding. My interpretation of that is that we cannot identify specific MW protein bands in a reasonable SDS-PAGE gel of these materials. Therefore, it will not be possible to perform the simple stability test using pepsin to determine digestibility of specific proteins.

5. Literature and database searches for allergenicity of rice

The scientific literature was searched for published studies on food allergy of rice on 4 February 2020 dating to 1959 finding 359 articles. The abstracts of articles were read and evaluated. Articles that seemed to focus on clinical allergy to rice, or the allergenicity of rice protein from food reactions were identified and evaluated for practical descriptions of the subjects and test methods used to identify proteins and serum IgE antibodies specific to the proteins in blood samples from subjects. A search was conducted for biological consequences of the study results. In addition, the Allergen Nomenclature (WHO/IUIS) database www.allergen.org, was searched to identify proteins from rice that are considered as possible targets of IgE binding or clinical reactivity in rice consumers. The www.AllergenOnline.org database was also searched for evidence of allergy to the proteins in rice and results are presented here.

5.1 PubMed literature search. The NCBI PubMed database was searched for scientific studies used to evaluate clinical and laboratory data on food allergy to rice. Search terms included “Oryza” AND “Food” AND “allergen”. One hundred and eighty-eight papers were found and added to a list. Then a second search was used with “Oryza” AND “food” AND “allergen” and one hundred and thirty papers were found. The list of the search results was reviewed, and publications considered to be irrelevant, such as those associated with vaccines, T-cell activation with transgenic seeds with added cedar pollen genes and other papers irrelevant to identification of rice allergenic proteins, were removed. The final list included 24 publications that are shown in Appendix 1. The individual papers were reviewed. Some, such as 1) Blackman from Houston, Texas report on 74 cases over a 3-year period of children in the United States with FPIES and the cause of their reactions. Rice was a cause of FPIES in 53% of the 74 cases, and most of the subjects reacting to rice also reacted to at least one other source. They did not identify any protein from rice as the elicitor. Chen et al., (2019) quantitated rice Glyoxylase (glb33), a protein reported to be an allergen in rice at 10 µg/g to 0.6 mg/g of rice in a sample of rice, both are very low quantities for any allergic reaction. Ruffner et al. (2019) reported pediatric epidemiology for FPIES in Philadelphia with 158,510 subjects in a birth cohort. Only 214 had FPIES based on the 2017 FPIES diagnostic criteria. They identified rice as a common cause of

FPIES, but oat was markedly more common, and it was a bit higher than wheat in the grain elicited subjects. Milk and soybean are more common causes of FPIES in their population. IgE mediated allergy has been noted in a number of articles, but the prevalence is fairly rare. Many of the early studies were of inhalation allergy from houses in Japan, Taiwan and the Philippines that were grinding rice to flour. The subjects were not noted as having food allergy to rice. Some newer ones suggest food allergy. A recent study by Satoh et al (2019) identified a 52 kDa bran protein as an allergen. Earlier studies showed Lipid Transfer Proteins (LTP), alpha amylase/trypsin inhibitors, alpha-globulin, a 33 kDa glyoxalase I, a 52 and 63 kD globulin as possible airway allergens, but that did not show IgE binding or prevalence (Satoh et al., 2016). The referenced papers in Satoh et al. are mostly from 1979 to 1995. The allergen clearly identified for subjects in Italy was LTP. However, that has not been thoroughly demonstrated as there were no studies with purified protein.

Overall, based on my research and review of the literature, the prevalence of IgE reactivity to rice in foods is quite low, but without statistical numbers as there are few documented epidemiological studies. Lang et al. (2015) performed in vitro digestion assays to look for allergenic proteins. While they name a number of “allergens”, they did not perform IgE binding or demonstrate allergy. Rice is still considered to be a relative safe food regarding food allergy. An interesting paper by Golias et al. (2013) evaluated nearly 50 wheat allergic subjects, a few of whom complained of rice allergy. They performed protein extraction and IgE binding to wheat extracts and to rice extracts and showed IgE binding to a number of proteins. They did not perform inhibition studies, but it seems likely based on MW of bands that there is considerable cross-reactivity. They did refer to a number of studies from Japan and from Italy of papers that indicated IgE binding and maybe allergy to the proteins already discussed. They also indicate that many allergists believe rice is a low risk food for most allergic subjects. Their study used IgE binding and some Skin Prick Tests (SPT) and basophil activation (BAT) and the BAT levels indicate that rice is possibly a cross-reaction for subjects with wheat allergy. Their BAT included samples of boiled rice and they indicate the activity in BAT was mostly reduced or gone compared to raw rice samples. Grass pollen allergy is another confounding factor they mentioned. Since rice is consumed as a boiled product, it is unlikely that most of the subjects would react to consumption of rice. Another study on airway allergy in 2012 showed two subjects from bakeries who became allergic to rice flower and had IgE to alpha-amylase inhibitor eventually began developing food allergy to consumption of rice, occurring after exercise. A number of reports of LTP being an allergen for some people began with studies in Italy and Spain, typically to those allergic to peach LTP. These seem to be cross-reactive in IgE binding in the laboratory, though the protein sequence is yet to be identified (Pastorello et al., 2000 and 2013). LTP is apparently a potent food allergen for some subjects in Italy, especially in individuals with allergy to peach (Asero et al., 2007).

The literature review shows that many people have serum IgE that binds to some rice proteins. The number of subjects with clear allergic reactions to cooked rice is quite low. The IgE is in many cases a matter of IgE cross-reactivity to pollen or inhalation of rice

flour, with little or no substantial allergic reactions. Some subjects do have urticaria and asthma due to the airway allergy. However, it seems that few people react to cooked rice.

5.2 The WHO/IUIS Allergen Nomenclature Sub-Committee database, search for allergens. The database at www.allergen.org was searched for allergens to rice (Oryza sativa). Only two proteins have been named as rice allergens. One is Ory s 1, a beta expansin that was bound by IgE from grass pollen allergic subjects. The protein is expressed in pollen tubes and also in germinating rice, or in stems. People with IgE to grass pollen have IgE that binds to the highly conserved proteins. A second protein that was recognized is Ory s 12, a profilin. Profilins are highly conserved across broad taxonomic groups. The data claiming allergy were from subjects with pollen allergy.

5.3 The AllergenOnline.org database search for allergens. The www.AllergenOnline.org database was searched for allergens in rice, (Oryza sativa). The already discussed Ory s 1 and Ory s 12 are included. Also, Glyoxalase or Glb33 was noted as an allergen based on the paper by Usui et al. (2001) as an airway allergen of bakers. The protein does include cross-reactive carbohydrate determinants and that might be the source of IgE binding. A polcalcin protein that is a homologue of Phl p 7 was recognized by serum IgE of some rice-pollen allergic subjects. There is no evidence of food allergy. There are a number of sequences of trypsin/alpha-amylase inhibitor proteins that bound IgE from subjects with baker's asthma. They are 14-16 kDa proteins from this family of proteins, but there is no direct science-based evidence of allergy to these proteins in the literature.

6 Discussion. The evidence for the prevalence of allergy to rice proteins is not clear. It appears that the most common issue is FPIES that has been associated with consumption of rice and a number of other foods, yet no specific proteins in rice have been implicated in eliciting the response. In addition, there are no antibodies that can identify the proteins. The prevalence of IgE mediated allergy to rice is also fairly rare. Most reactions are in bakers or others exposed to flour from rice grain. A few proteins from rice have been identified as allergens, although most apparently elicit airway sensitization or are simply proteins that share IgE binding to proteins from other airway sources such as wheat pollen or flour. Those proteins are typically not found in rice grain or flour.

Based on the reviewed evidence, it does not appear to me that the PeptAIde rice protein hydrolysate preparation or the concentrated rice protein material would pose a significant risk of allergy to a clearly defined consumer group beyond the relatively few people who should avoid eating rice. Some have rice associated FPIES, a few have clear food allergy to rice, not just serum IgE binding. As long as foods that would contain either of these ingredients are labeled as containing rice, consumers should be sufficiently warned to avoid possible allergic reactions.

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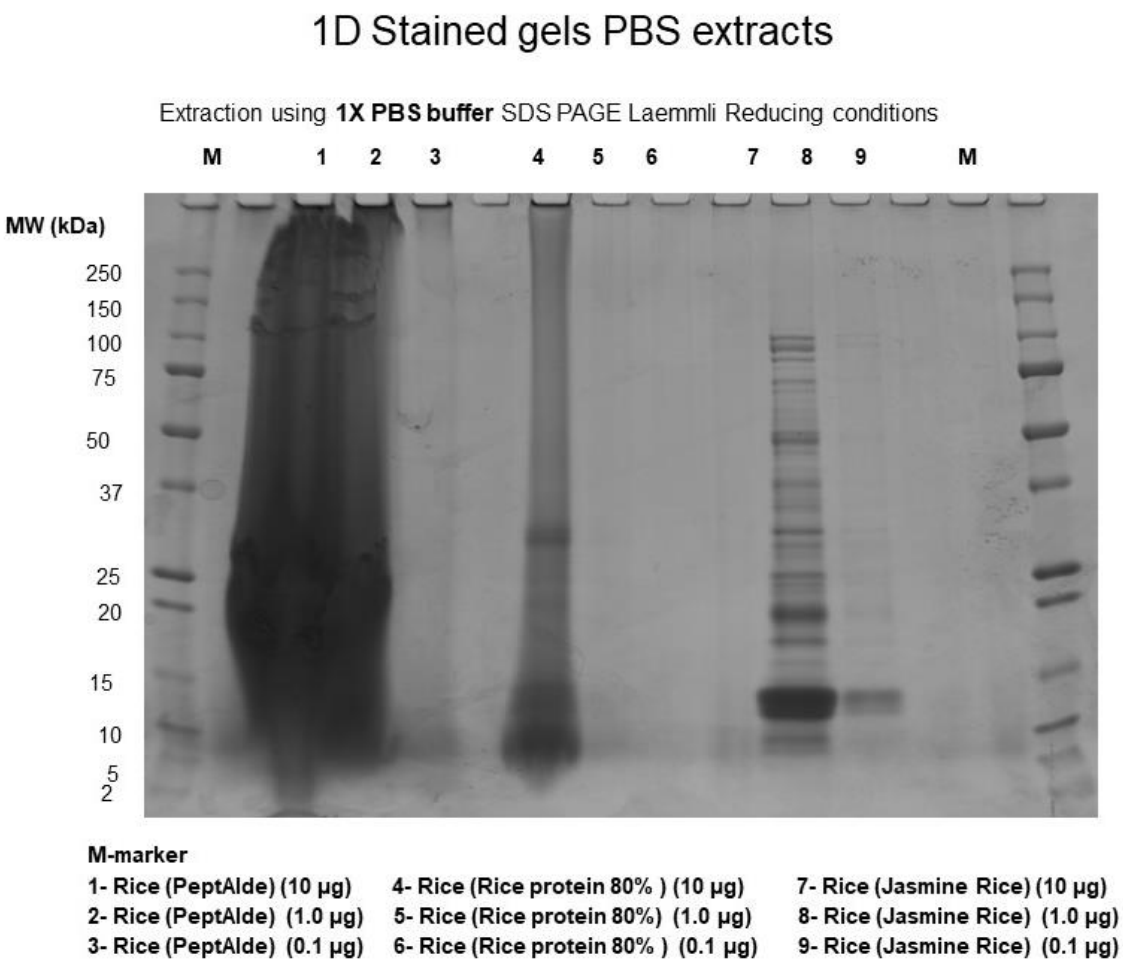

Figure 1. Proteins separated in SDS-PAGE reducing gel from PBS extracted materials, PeptAIde, 80% rice protein concentrate and raw, ground Jasmine rice powder. Gel was stained with Coomassie Brilliant Blue R-250.

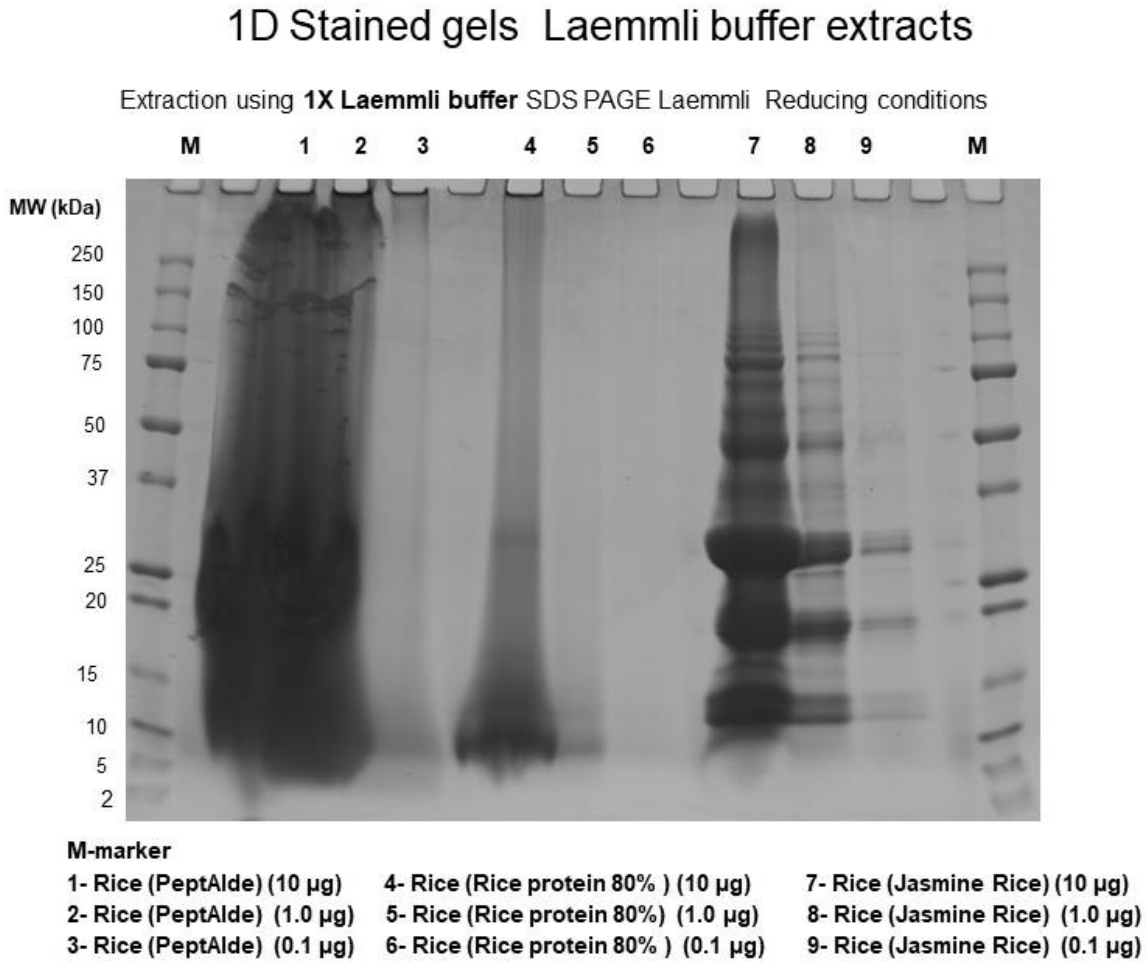

Figure 2. Proteins separated on SDS-PAGE from Laemmli buffer extracts of proteins of PeptAIde, 80% rice protein concentrate and raw Jasmine rice extract. Staining was with Coomassie Brillian Blue R250.

Figure 3 RSSL Report SDS-PAGE insoluble and soluble protein fractions of PeptAIde

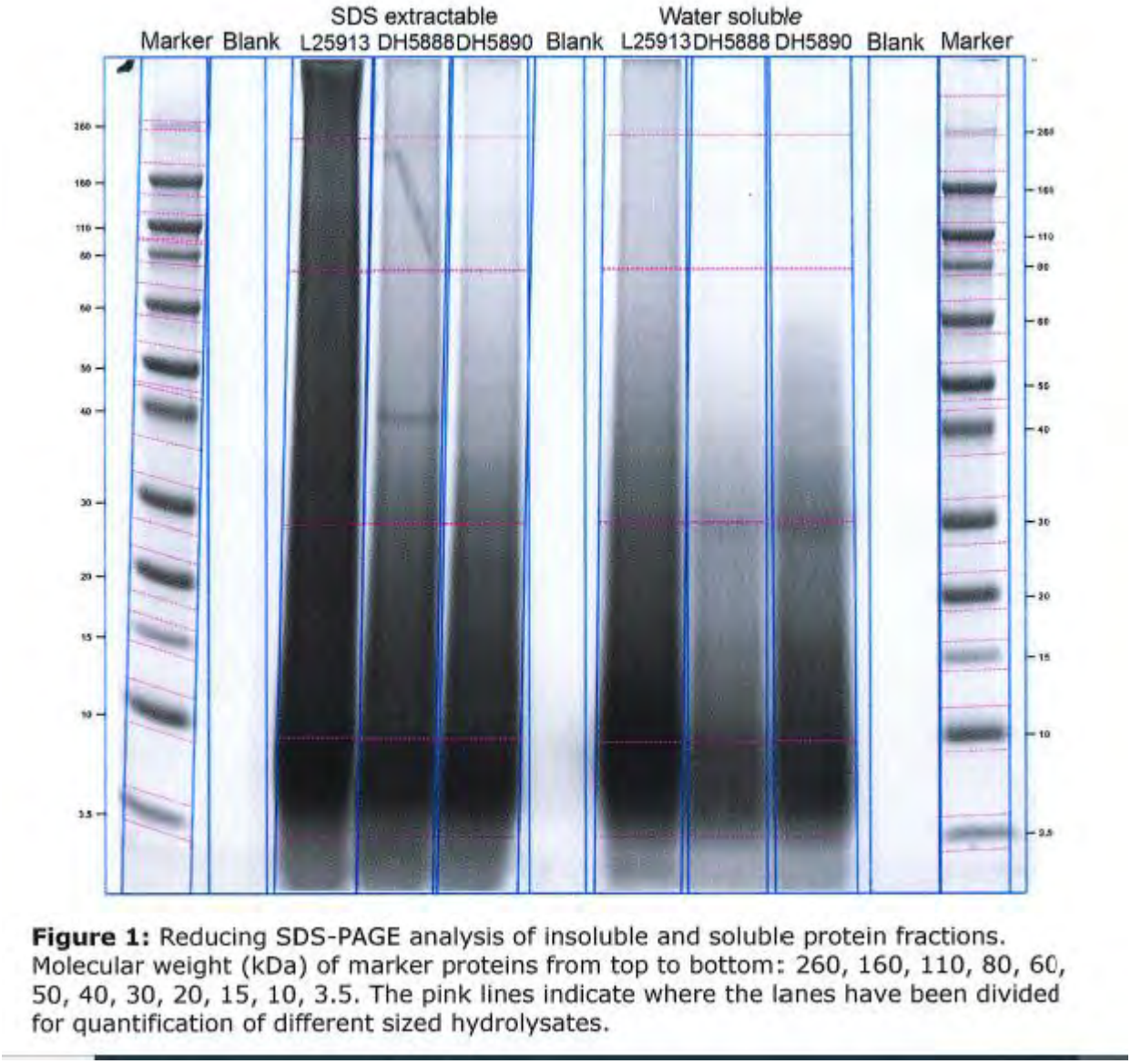

Figure 1: Reducing SDS-PAGE analysis of insoluble and soluble protein fractions. Molecular weight (kDa) of marker proteins from top to bottom: 260, 160, 110, 80, 60, 50, 40, 30, 20, 15, 10, 3.5. The pink lines indicate where the lanes have been divided for quantification of different sized hydrolysates.

Figure 3., Copy of figure from RSSL study report, supplied by BASF.

Appendix 1: Literature Search for Rice Allergens

Attached is a 4 page PDF labeled Applendix 1, which includes publications that clearly represent identification of an allerenic protein.

APPENDIX 1. Literature results for allergy to rice food. Using PubMed

RE Goodman 4 Feb 2020

Search terms.

Rice AND Food AND allergen

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Appendix F. Signed GRAS Panel Statement

Generally Recognized as Safe (GRAS) Panel Consensus Statement on the GRAS Determination of the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages

Introduction

The undersigned, an independent panel of experts, qualified by their scientific training and national and international experience to evaluate the safety of food and food ingredients was specially convened to evaluate the safety and "generally recognized as safe" ("GRAS") status of the intended use of rice protein hydrolysate, referred to as PeptAIde™, for the intended use in select foods and beverages. The panel is referenced as the "GRAS Panel". For purposes of this review, "safe" or "safety" means that there is "a reasonable certainty in the minds of competent scientists that the substance is not harmful under the intended conditions of use," as defined by the United States Food and Drug Administration (FDA) in 21 CFR § 170.30.

Exponent, Inc. ("Exponent") performed a comprehensive search of the scientific literature, through January 2019, relating to the safety of rice protein hydrolysate with respect to the proposed use of PeptAIde™ for the intended use in select foods and beverages. Exponent summarized results of the literature search and prepared a safety dossier, "Documentation Supporting a GRAS Conclusion for the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages" for consideration by the GRAS Panel.

The GRAS Panel consisted of the following individuals: Dr. Robert J. Nicolosi, Ph.D. (Professor Emeritus, Clinical Laboratory and Nutritional Sciences, University of Massachusetts Lowell), and Dr. Nadine R. Sahyoun, Ph.D. (Professor, Nutrition and Food Science, University of Maryland). The GRAS Panel critically evaluated Exponent's safety documentation (the dossier) and other available data and information that the members of the GRAS Panel believed to be pertinent to the safety of the proposed use of PeptAIde™.

On April 4, 2019, and April 24, 2019, the GRAS Panel convened via teleconference and independently, jointly, and unanimously concluded that PeptAIde™, produced consistent with current good manufacturing practice (cGMP) and meeting the stated specifications, is safe for use as an ingredient in select foods and beverages. The GRAS Panel further concluded unanimously that the intended use of PeptAIde™ in select foods and beverages is GRAS based on scientific procedures. It is also the unanimous consensus opinion of this GRAS Panel that other qualified experts would concur with these conclusions.

Summarized below are the data, information, and interpretive analysis supporting the GRAS Panel's conclusions.

Description

PeptAIde™ is made from protein derived from non-GMO *Oryza sativa* whole-grain brown rice. *Oryza sativa* possesses a long, well documented history of use with domestication, commercialization, and consumption dating back more than 9,000 years. PeptAIde™ is prepared from brown rice protein by hydrolysis in an aqueous dispersion using a protease enzyme preparation. Raw materials used in the production of the rice protein hydrolysate are analyzed to assure compliance with acceptance criteria for quality and safety, and all production steps are carried out in compliance with cGMP. Specifications for macronutrient components and potential heavy metal, microbiological, and mycotoxin impurities in the rice protein hydrolysate are appropriate for a food ingredient. Analytical data from non-consecutive batches demonstrate the product specifications are consistently met.

Intended Use and Estimated Daily Intake

PeptAIde™, the rice protein hydrolysate that is the subject of this review, is compositionally similar to commonly consumed protein concentrates such as whey and soy protein concentrates as well as a GRAS rice protein concentrate. The intended use of the rice protein hydrolysate is in: sports nutrition bars; drink powders and protein squeezes; breads/rolls; bagels, toaster pastries, muffins; cookies; lightweight cakes; pies, cobblers, fruit crisps, turnovers, other pastries; non-milk based meal replacements, protein fortified smoothies, high protein drinks (prepared or non-reconstituted); breakfast cereals (excluding light weight cereals); vegetable and nut-based milk analogues; health bars, grain bars containing fruit and vegetables; nutritionally enriched and flavored milk drinks, milk-based meal replacements; yogurt; frozen yogurt, and meat alternatives and imitation meat products at levels providing 3 to 20 grams PeptAlde™ per serving of food and up to 20 g protein per serving in sports nutrition products such as protein bars, protein powders and protein squeezes. For the population ages 2 years and older, the *per user* mean and 90th percentile estimated daily intakes (EDIs) of protein from the intended use are 12.9 and 25.9 g/day, respectively. Intake of PeptAIde™ is reasonably substitutional for many intended uses of a current GRAS rice protein concentrate as well as other GRAS plant-based protein isolate or concentrate ingredients intended for use for a variety of technical and nutritional purposes (e.g., GRNs 327, 447, 608, 609, 683, 684, 788).

Assessment of Safety

Rice is a food with a long history of use. Rice protein, a component of rice, has a history of use through consumption of rice. Rice protein concentrate also is recognized as a GRAS ingredient for use in select foods. The use of rice protein concentrate (Oryzatein™) derived from brown rice in select foods was previously determined to be safe and GRAS by Axiom (GRN 609). When notified of this conclusion, FDA responded with a letter of no concern (FDA, 2016). The safety of rice protein concentrate was established based on the similar composition of rice

protein concentrate with protein concentrates of whey and soy, which have been widely consumed with no known safety concerns. As reviewed in GRN 609, pre-clinical and clinical data support the safe intake of rice protein. No new information was identified in the current review to call into question the previous conclusion of safety.

Protein ingredients from a wide variety of sources including plant, dairy, animal, fungal, and yeast sources also have been the subject of GRAS notifications to FDA for use in select foods. Many of these protein ingredients are provided as an isolate or concentrate. Plant proteins other than rice protein concentrate or isolate that have been the subject of GRAS conclusions include canola protein (GRNs 683, 386, 327), pea protein (GRNs 788, 608, 581), hemp seed protein (GRN 771), mung bean protein (GRN 684), oat protein (GRN 575), potato protein (GRNs 86, 447), soy protein (GRN 134), and wheat protein (GRN 26). FDA responded to each of these notifications with a letter of no concern regarding the intended uses of these proteins.

The available evidence on nutritional and compositional comparisons between rice protein products and other protein extract formulations, including whey and soy, shows that rice protein has similar profiles to other commercially available protein extracts generally considered safe. Available studies on the safety of rice protein include *in vivo* studies in rats and mice demonstrating no acute oral toxicity or mutagenicity studies, clinical studies in infants including a growth study of infants given a hydrolyzed rice protein based infant formula, and studies of resistance-trained athletes consuming rice protein isolate. In addition, two studies examined the ileal digestibility of rice protein concentrate in weaned piglets. The findings from these studies support the safe use of rice protein for human consumption at the intended level of use.

The intended use of the rice protein hydrolysate is in select foods and beverages at levels providing 3 to 20 grams PeptAlde™ per serving of food and up to 20 g protein per serving in sports nutrition products such as protein bars, protein powders and protein squeezes. For the population ages 2 years and older, the *per user* mean and 90th percentile EDIs of protein from the intended use are 12.9 and 25.9 g/day, respectively. The estimates of PeptAIde intake are comparable to estimates of protein intake previously concluded to be GRAS. Similar to the existing GRAS protein ingredients, use of PeptAIde can be assumed to be largely substitutional for other protein ingredients and protein foods in the diet and thus have a minimal net impact on protein intake. A Tolerable Upper Intake Level (UL) for protein intake has not been established by the Institute of Medicine (IOM).

Use of PeptAIde^{TM} therefore can be concluded to be safe, and it can be concluded that the proposed use of PeptAIde^{TM} in: sports nutrition bars; drink powders and protein squeezes; breads/rolls; bagels, toaster pastries, muffins; cookies; lightweight cakes; pies, cobblers, fruit crisps, turnovers, other pastries; non-milk based meal replacements, protein fortified smoothies, high protein drinks (prepared or non-reconstituted); breakfast cereals (excluding light weight cereals); vegetable and nut-based milk analogues; health bars, grain bars containing fruit and

vegetables; nutritionally enriched and flavored milk drinks, milk-based meal replacements; yogurt; frozen yogurt; and meat alternatives and imitation meat products is safe within the meaning of the FD&C Act, i.e., meets the standard of reasonable certainty of no harm.

Summary

Rice protein hydrolysate, referred to as PeptAIde™, is intended for use in select foods and beverages. A comparison of compositional data for PeptAIde™ indicates that PeptAIde™, the rice protein hydrolysate that is the subject of this review, is compositionally similar to commonly consumed protein concentrates such as whey and soy protein concentrates as well as a GRAS rice protein concentrate. The intended use of the rice protein hydrolysate is in select foods and beverages at levels providing 3 to 20 grams PeptAlde™ per serving of food and up to 20 g protein per serving in sports nutrition products. The estimates of PeptAIde intake are comparable to estimates of protein intake previously concluded to be GRAS. Similar to the existing GRAS protein ingredients, use of PeptAIde can be assumed to be largely substitutional for other protein ingredients and protein foods in the diet and thus have a minimal net impact on protein intake. A UL for protein intake was not established by the IOM. Thus, the use of PeptAIde™ as a food ingredient for the uses specified herein can be concluded to be safe. General recognition of safety through scientific procedures requires common knowledge throughout the scientific community knowledgeable about the safety of food ingredients, and that there is a reasonable certainty that a substance is not harmful under the intended conditions of use in foods. The aforementioned regulatory and scientific reviews related to the consumption and safety of PeptAIde™ have been published in the scientific literature and, therefore, are generally available and generally known among the community of qualified food ingredient safety experts. There is broad-based and widely disseminated knowledge concerning rice protein hydrolysates such as PeptAIde™. The data and publicly available information supporting the safety of the proposed use of PeptAIde™, for its intended use in select foods and beverages as proposed in this document, are not only widely known and disseminated, but are also commonly accepted among qualified food safety experts. The proposed use of PeptAIde™ for the intended use in select foods and beverages therefore can be concluded to be safe and generally recognized as safe (GRAS) through scientific procedures.

Conclusion

We, the members of the GRAS Panel, have individually and collectively critically evaluated the published and unpublished data and information summarized above, and conclude that the intended uses of PeptAIde™ as an ingredient in: sports nutrition bars; drink powders and protein squeezes; breads/rolls; bagels, toaster pastries, muffins; cookies; lightweight cakes; pies, cobblers, fruit crisps, turnovers, other pastries; non-milk based meal replacements, protein fortified smoothies, high protein drinks (prepared or non-reconstituted); breakfast cereals (excluding light weight cereals); vegetable and nut-based milk analogues; health bars, grain bars containing fruit and vegetables; nutritionally enriched and flavored milk drinks, milk-based meal replacements; yogurt; frozen yogurt, and meat alternatives and imitation meat products at levels providing 3 to 20 grams PeptAIde™ per serving of food and up to 20 g protein per serving in sports nutrition products, produced consistent with current Good Manufacturing Practice (cGMP) and meeting appropriate food-grade specifications as presented in the supporting dossier ["Documentation Supporting GRAS Conclusion for the Use of Rice Protein Hydrolysate (PeptAIde™) in Select Foods and Beverages"] are safe and suitable.

We, the members of the GRAS Panel, further conclude that the intended uses of PeptAIde™, produced consistent with current Good Manufacturing Practice (cGMP) and meeting appropriate food-grade specifications as presented in the supporting dossier are "Generally Recognized as Safe" (GRAS) based on scientific procedures.

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

[redacted]

Robert J. Nicolosi, Ph.D.
Professor Emeritus, Clinical Laboratory
and Nutritional Sciences
University of Massachusetts Lowell (Panel Member)

04/27/2019
Date

[redacted]

Nadine R. Sahyoun, Ph.D.
Professor, Nutrition and Food Science
University of Maryland (Panel Member)

4/30/2019
Date

From: Nga Tran
To: Bonnette, Richard
Subject: [EXTERNAL] RE: GRN 944 - Rice protein hydrolysate - minor clarification
Date: Wednesday, March 10, 2021 1:49:59 PM

Dear Richard,
My apology. The 0.2 ug/kg in the narrative is a typographical error. It should be corrected as 0.2 mg/kg as listed in the specifications table (Page 15). The rest of the calculated EDI for arsenic based on the specifications limit of 0.2 mg/kg is correct:

(0.025 kg /day x 0.2 mg/kg)/60 kg bw = 0.00008 mg/kg bw/day or 0.08 mcg/kg bw/day

Please let me know if you have other questions.
Thanks
Nga

From: Bonnette, Richard <Richard.Bonnette@fda.hhs.gov>
Sent: Wednesday, March 10, 2021 11:23 AM
To: Nga Tran <ntran@exponent.com>
Subject: [EXTERNAL] GRN 944 - Rice protein hydrolysate - minor clarification

Hello Nga,
Hope things are going well with you. We had a quick question to confirm with you about the GRAS notice for rice protein hydrolysate. I suspect it's a typo, but we need to confirm for the record.

1. We note that in the BASF's narrative regarding specifications and dietary exposures for total arsenic the state that the specification for arsenic is 0.2 ug/kg. However, in their table (page 15) that list specifications the specification is listed as 0.2 mg/kg. The notifier should clarify this discrepancy around the specification for total arsenic since their dietary exposures are based on that specification.

Thanks,
Richard

From: Nga Tran
To: Bonnette, Richard
Subject: [EXTERNAL] RE: GRN 944 - Rice protein hydrolysate - additional questions
Date: Friday, April 02, 2021 9:24:21 AM

Dear Richard,
Thank you for sharing the questions.
BASF's responses are provided below.

Question 1:

1-a. Please clarify if only one enzyme preparation will be used per manufacturing.

Response: Yes. Single enzyme preparation is used in manufacturing of PeptAide

1-b. Please confirm that the enzyme(s) used have the appropriate regulatory status for the intended use in the U.S.

Response: Yes. Our supplier confirmed the enzyme to be " self-affirmed GRAS" for food processing.

1-c. Please confirm the introduced enzymes are from non-toxigenic and nonpathogenic sources.

Response: Yes. The enzyme is obtained from non-toxigenic and non-pathogenic *Bacillus subtilis* or *Bacillus amyloliquefaciens* and classified as EC.3.4.21.62.

Question 2. In the notice, you list several internal test methods used to assess if rice protein hydrolysate meets product specifications. Please confirm that the test methods used are validated for the particular purpose

Response**:** BASF internal methods are based on national or international validated test methods.

Loss on Drying internal test method, CP-002121

Principle: Gravimetric method (oven)

Reference: Ph. Eur. 2.2.32. "Loss on drying"

Appearance – Internal test method "AX-001001"

- Principle: Visual inspection of the product
- Reference: DGF* C-II 1 "External characteristics – Sensory assessment"

*DGF stands for "Deutsche Gesellschaft für Fettwissenschaft" – German Society for Fat Science

Ash – Internal test method "CP-001024"

- Principle: Gravimetric combustion and incineration (oven)
- Reference: ISO 6884 "Animal and vegetable fats and oils — Determination of ash"

Bacterial count aerobic, mesophile – Internal test method "MB-002035"

- Principle: Colony-count at 30 C by pour plate technique
- Reference: ISO 4833-1 "Microbiology of the food chain — Horizontal method for the enumeration of

microorganisms — Part 1: Colony count at 30 degrees C by the pour plate technique"

- This testing principle is also named "L 00.00-88/2" - the German national official test method for general foods. It has been applied in testing of Batches #1, 2 and 3 (see Appendix B, lab reports from LS)

E. coli - Internal test method "MB-007032"

- Principle: Detection (acid production based on lactose fermentation) and counting in selected dilution steps
- Reference: ISO 16649-3 "Microbiology of the food chain — Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli — Part 3: Detection and most probable number technique using 5-bromo-4-chloro-3-indolyl-ß-D-glucuronide"

Coliforms - Internal test method "MB-006038"

- Principle: Detection (gas production based on lactose fermentation) and counting in selected dilution steps
- Reference: ISO 4831 "Horizontal method for the detection and enumeration of coliforms - Most probable number technique"

Yeasts and moulds - Internal test method "MB-002039"

- Principle: Colony-count at 30 C by pour plate technique
- Reference: Ph.Eur.4 Ch. 2.6.12 "Microbiological examination of non-sterile products: microbial enumeration tests"
- This testing principle is also named "L 01.00-37" - the German national official test method for milk products. It has been applied in testing of Batches #1, 2 and 3 (see Appendix B, lab reports from LS)

Please let us know if there are further questions.
Best regards,
Nga

From: Bonnette, Richard <Richard.Bonnette@fda.hhs.gov>
Sent: Monday, March 29, 2021 2:23 PM
To: Nga Tran <ntran@exponent.com>
Subject: [EXTERNAL] GRN 944 - Rice protein hydrolysate - additional questions

Hello Nga,

We have a few additional chemistry-related things to clarify related to the rice protein hydrolysate notice (GRN 944).

1. In the notice, you state that a protease is added during the hydrolysis step in the manufacture of rice protein hydrolysate. You also state that the protease enzyme preparations used comply with purity specifications recommended for food-grade enzymes by JECFA and the FCC. In Table 3, you list the enzymes as processing aids and provide information on the regulatory status. While you specifically list EC 3.4.21.62 (subtilisin) under 21 CFR 184.1150, you also list "endoproteases/ endopetidases" declared GRAS by suppliers may be used.
   a. Please clarify if only one enzyme preparation will be used per manufacturing.

b. Please confirm that the enzyme(s) used have the appropriate regulatory status for the intended use in the U.S.
c. Please confirm the introduced enzymes are from non-toxigenic and nonpathogenic sources.

2. In the notice, you list several internal test methods used to assess if rice protein hydrolysate meets product specifications. Please confirm that the test methods used are validated for the particular purpose.

Regards,
Richard