GRAS Determination of Sunflower Protein for Use in Food

MAY 19, 2021

ToxStrategies

Innovative solutions
Sound science

GRAS Determination of Sunflower Protein for Use in Food

SUBMITTED BY:

Austrade, Inc.
3309 Northlake Blvd. #201
Palm Beach Gardens, FL 33403

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

CONTACT FOR TECHNICAL OR OTHER INFORMATION

Rayetta G. Henderson, Ph.D.
ToxStrategies, Inc.
1121 Military Cutoff Rd.
Suite C, Box 352
Wilmington, NC 28405

MAY 19, 2021

Table of Contents

List of Figures

List of Tables

Acronyms

ALP	alkaline phosphatase
ALT	alanine transaminase
AST	aspartate transaminase or alanine aminotransaminase
bw	body weight
CAS	Chemical Abstracts Service
CFR	Code of Federal Regulations
cfu	colony-forming units
cGMP	current Good Manufacturing Practice
CIR	Cosmetic Ingredient Review
COA	Certificate of Analysis
DRV	dietary reference value
EFSA	European Food Safety Authority
FAO	Food and Agriculture Organization of the United Nations
FDA	U.S. Food and Drug Administration
FD&C	Federal Food, Drug, and Cosmetic Act
GMP	Good Manufacturing Practice
GRAS	Generally Recognized as Safe
GRN	GRAS Notification
HDL	high-density lipoprotein
IgE	immunoglobulin E
JECFA	Joint FAO/WHO Expert Committee on Food Additives
IOM	Institute of Medicine
QC	quality control
RDA	recommended daily allowance
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
WHO	World Health Organization

§ 170.225 Part 1, GRAS Notice: Signed Statements and Certification

(1) GRAS Notice Submission

Austrade, Inc. (Austrade), through its agent, ToxStrategies, Inc., hereby notifies the U.S. Food and Drug Administration (FDA) of the submission of a Generally Recognized as Safe (GRAS) notice for sunflower protein in accordance with Subpart E of 21 CFR § 170, and that the use of sunflower protein described below that meets the specifications described herein is exempt from the pre-market approval requirements of the Federal Food, Drug, and Cosmetic Act, because Austrade has determined that such use is GRAS through scientific procedures.

(2) Name and Address

Austrade, Inc.
3309 Northlake Blvd. #201
Palm Beach Gardens, FL 33403

(3) Name of Notified Substance

The name of the substance that is the subject of this GRAS determination is sunflower protein, also known as sunflower seed protein, derived from *Helianthus annuus*.

(4) Intended Use in Food

Austrade proposes to use sunflower protein as a source of protein for enrichment of conventional foods, identical to the food use of other plant-derived proteins previously deemed to be and/or notified as GRAS to the U.S. FDA.

(5) Statutory Basis for GRAS Determination

Austrade, through its agent, ToxStrategies, Inc., hereby notifies the FDA of the submission of a GRAS notice for sunflower protein, which meets the specifications described herein and has been determined to be GRAS through scientific procedures in accordance with § 170.30(a) and (b).

(6) Premarket Approval Statement

Austrade further asserts that the use of sunflower protein in food, as described below, is exempt from the pre-market approval requirements of the Federal Food, Drug, and Cosmetic Act, based on a conclusion that the notified substance is GRAS under the conditions of its intended use.

(7) Availability of Information

The data and information that serve as the basis for this GRAS determination, as well any information that has become available since the GRAS determination, will be sent to the FDA on request, or are available for the FDA's review and copying during customary business hours from ToxStrategies, Inc., Wilmington, NC.

(8) Data and Information Confidentiality Statement

None of the data and information in the GRAS notice is exempt from disclosure under the Freedom of Information Act, 5 U.S.C. 552.

(9) GRAS Notice Certification

To the best of our knowledge, the GRAS notice is a complete, representative, and balanced submission. Austrade is not aware of any information that would be inconsistent with a finding that the proposed use of sunflower protein in food that meets appropriate specifications and is used according to current Good Manufacturing Practices (cGMP), is GRAS. Recent reviews of the scientific literature revealed no potential adverse health concerns.

(10) Name/Position of Notifier

[redacted]

5/19/2021
Date

Rayetta G. Henderson, PhD
Managing Scientist
ToxStrategies, Inc.
Agent for Austrade, Inc.

(11) FSIS Statement

The intended use of the sunflower protein product includes use as an alternative meat extender and binder limited only by GMP, as soy protein is so limited by the U.S. Department of Agriculture (USDA).

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

Identity

The sunflower protein products that are the subject of this GRAS determination include the following:

- Heliaflor® 45 Sunflower Protein
- Heliaflor® 55 Sunflower Protein
- Heliaflor® 55 Sunflower Protein Crisps.

The sunflower protein products are protein concentrates derived from *Helianthus annuus* and provide a high level of nutrition, containing a minimum of 41% protein.

Common Names

Sunflower protein(s)

CAS Registry Number

There is no Chemical Abstracts Service (CAS) Registry Number for sunflower protein.

Chemical/Structural Formulas

The sunflower protein products are protein concentrates, prepared from sunflower seeds. They are rich in sunflower protein, typically containing a minimum of 41% protein (dry basis).

The representative nutritional composition and amino acid profile of the sunflower proteins can be found in Tables 1 and 2, respectively, and in Appendix A.

The amino acid profile for Heliaflor 55 Sunflower Protein Crisps is expected to be similar to that of Heliaflor 55 Sunflower Protein, because the only difference between the two proteins is the extrusion process used in the crisp production. As such, only data for the crisps are presented below.

Table 1. Nutritional composition specification for sunflower protein products

Nutrition per 100g	Heliaflor® 45 Sunflower Protein	Heliaflor® 55 Sunflower Protein	Heliaflor® 55 Sunflower Protein Crisps
Calories (kcal), approximate	350	305	323
Protein (g), min	41	51	50
Total Carbohydrates (g), max	39	38	36
Carbohydrates (g), max	7	7	6
Dietary fiber (g), max	23	23	22
Sugar (g), max	9	8	8
Total Fat (g), max	16	2.5	4
Monounsaturated Fat (g), max	6	0.8	1.5
Polyunsaturated Fat (g), max	8	1.0	1.5
Saturated Fat (g), max	2	0.7	1.0
Trans Fatty Acid (g), max	0.02	0.01	0.01
Salt (g), max	0.005	0.01	0.01
Sodium (g), max	0.002	0.004	0.004
Calcium (mg), min	180	250	250
Potassium (mg), min	1350	1500	1500
Iron (mg), min	4	7	no specification
Folate (μg), min	280	200	no specification

Table 2. Representative amino acid profile of sunflower protein products

Amino Acid (g/100 g)	Heliaflor® 45 Sunflower Protein	Heliaflor® 55 Sunflower Protein and Crisps
Lysine	1.67	1.97
Methionine	0.99	1.16
Threonine	1.68	1.99
Tryptophan	0.45	0.83
Isoleucine	2.12	2.49
Leucine	3.00	3.58
Valine	2.56	3.04
Phenylalanine	2.34	2.73
Alanine	2.02	2.49
Arginine	3.74	4.65
Aspartic Acid	4.35	5.07
Cysteine	0.52	0.67
Glutamic Acid	9.33	10.85
Glycine	2.85	3.42
Histidine	1.15	1.42
Proline	2.07	2.25
Serine	1.81	2.15
Tyrosine	1.16	1.36

Manufacturing Process

The following is a description of the manufacturing process employed in the manufacture of the various sunflower protein products (see Figure 1). The manufacturing process shown in Figure 1 for the sunflower protein products is representative of the process employed in the manufacture of all of the sunflower protein products.

Sunflower protein products are derived from sunflower seeds that are mechanically cold-pressed for partial oil extraction. Mechanical pressing is used for partial oil extraction, followed by an optional supercritical CO_2 extraction step to further remove oil, and the sunflower protein end product is manufactured in compliance with good manufacturing practices. The manufacturing process does not include the use of chemicals, enzymes, or solvents.

The manufacturing process is performed in compliance with cGMP for food (21 CFR Part 110).

1. Sunflower seeds are received, tested, and approved for further processing. Testing includes physico-chemical properties, microbiological parameters, allergens (gluten and soya), heavy metals, aflatoxins, and pesticides.
2. The approved sunflower seeds then go through a cleaning and conditioning step, and a mechanical-screw cold press is implemented for partial oil extraction. For Heliaflor 55 products, an additional supercritical CO_2 extraction process is used to further remove oil.
3. The protein-rich sunflower press cake from either scenario described above moves through the process to be analyzed further and checked against product specifications.
4. Press cake that meets positive release criteria for protein content is homogenized and dry milled in the presence of nitrogen and low temperatures in a fine-grinding step using a registered trademark technology known as Kryonert®.
5. A Bactosafe kill-step process is then used for microbial control. The Bactosafe process is a heat treatment lasting ½ to 3 minutes. During this time, several 1- to 5-second heat treatment repetitions occur, with each reaching about 120°C.
6. For Heliaflor Sunflower Protein Crisps, the protein powder is processed further through an extruder to produce a textured form of the protein product.
7. The product is then tested for foreign material through a magnet and sieving process.
8. The final protein product goes through another analysis for nutritional content, allergens, and presence of mycotoxins and then is dispatched for storage and sale.

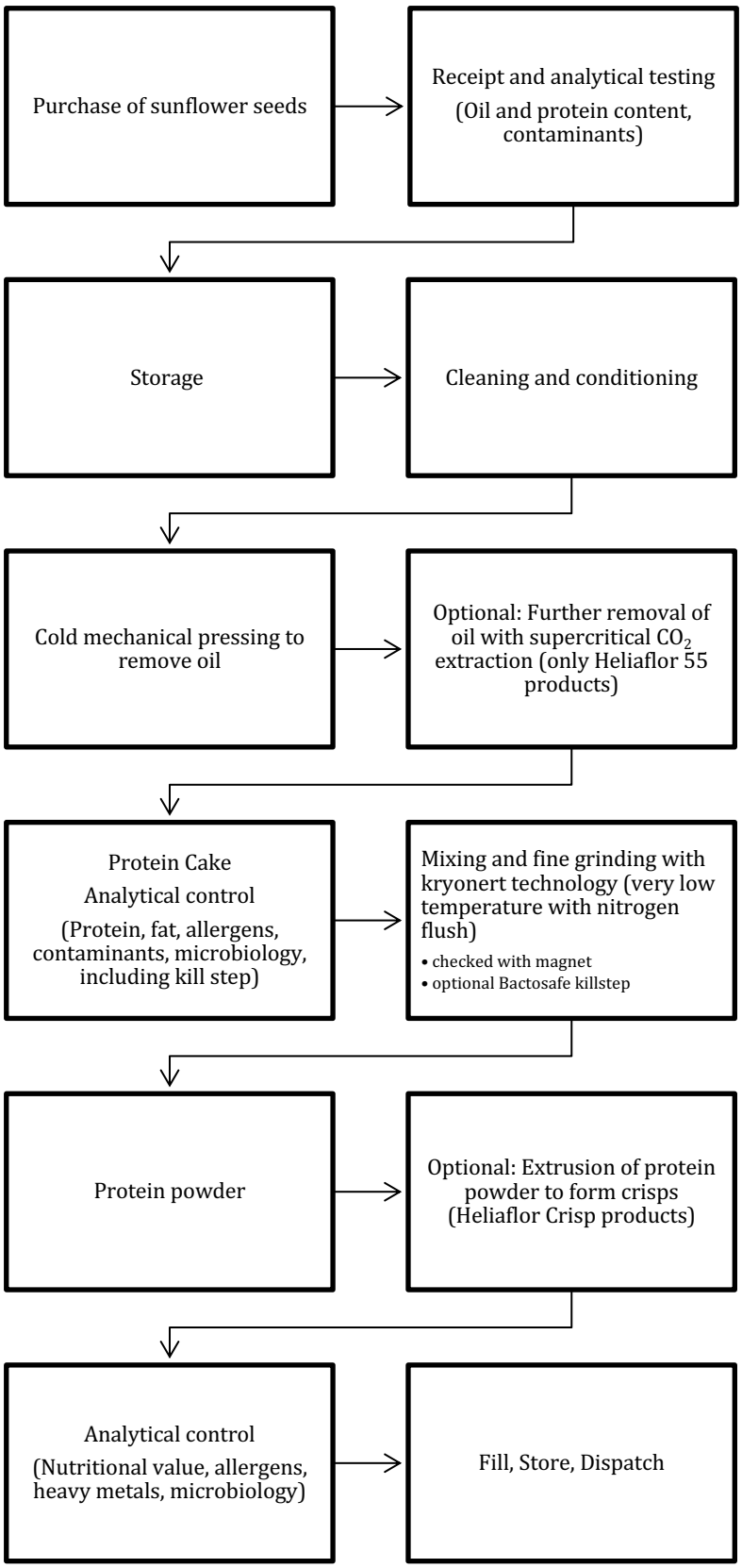

Figure 1. Manufacturing flow diagram for sunflower protein

The protein products are manufactured in accordance with cGMP, including quality control (QC) checks at various stages of the production process. All steps in the manufacturing process are conducted under conditions that minimize the risk of contamination with foreign materials.

Product Specifications

The specifications for the sunflower protein products are summarized in Table 3 and Appendix A. Analytical results for three non-consecutive lots of the proposed sunflower protein products are found in Tables 4-6 and the Certificates of Analysis (COAs) found in Appendix B.

Table 3. Specifications for sunflower protein products

Parameter	Heliaflor® 45 Sunflower Protein	Heliaflor® 55 Sunflower Protein	Heliaflor® 55 Sunflower Protein Crisps
Nutritional Value			
Protein (%)	≥41	≥51	≥50
Fat (%)	≤16	≤2.5	≤4
Moisture (%)	≤10	≤10	≤5
Heavy Metals			
Lead (mg/kg)	≤0.2	≤0.2	≤0.2
Mercury (mg/kg)	≤0.1	≤0.1	≤0.1
Arsenic (mg/kg)	≤0.1	≤0.1	≤0.1
Cadmium (mg/kg)	≤0.65	≤0.65	≤0.65
Microbiological Contaminants			
Total plate count (cfu/g)	≤10,000	≤10,000	≤10,000
Yeasts (cfu/g)	≤1000	≤500	≤1000
Molds (cfu/g)	≤1000	≤500	≤1000
Enterobacteriaceae: (cfu/g)	≤1000	≤1000	≤1000
Coliforms: (cfu/g)	≤100	≤100	-
E. coli (per 1 g)	Absent	Absent	Absent
Salmonella (per 375 g)	Absent	Absent	Absent

The specifications for Heliaflor 55 Sunflower Protein Crisps are expected to be similar to Heliaflor 55 Sunflower Protein, because the only difference between the two proteins is the extrusion process used in the crisp production.

Table 4. Analytical results for three non-consecutive lots of Heliaflor 45 Sunflower Protein

Parameter	Specifications	1674	1907A1708	18008249
Protein (%)	≥41	47.2	47.3	48.7
Fat (%)	≤16	11.1	11.1	10.4
Moisture (%)	≤10	8.1	6.4	7.1
Lead (mg/kg)	≤0.2	<0.015	<0.015	0.02
Mercury (mg/kg)	≤0.1	<0.010	<0.010	<0.010
Arsenic (mg/kg)	≤0.1	<0.04	<0.04	<0.04
Cadmium (mg/kg)	≤0.65	0.59	0.62	0.59
Total plate count (cfu/g)	≤10,000	310	270	1,300
Yeasts (cfu/g)	≤1000	<10	<10	<10
Molds (cfu/g)	≤1000	10	10	10
Enterobacteriaceae: (cfu/g)	≤1000	80	<10	<10
Coliforms: (cfu/g)	≤100	80	<10	<10
E. coli (per 1 g)	Absent	Absent	Negative	Negative
Salmonella (per 375 g)	Absent	Absent	Negative	Negative

Table 5. Analytical results for three non-consecutive lots of Heliaflor 55 Sunflower Protein

Parameter	Specifications	18152219	16158219	1827, M19-357
Protein (%)	≥51	51.9	53.7	52.1
Fat (%)	≤2.5	2.2	2.0	2.4
Moisture (%)	≤10	8.56	7.99	6.84
Lead (mg/kg)	≤0.2	<0.02	<0.02	<0.015
Mercury (mg/kg)	≤0.1	<0.010	<0.010	<0.010
Arsenic (mg/kg)	≤0.1	<0.04	<0.04	<0.04
Cadmium (mg/kg)	≤0.65	0.45	0.62	0.50
Total plate count (cfu/g)	≤10,000	320	240	40
Yeasts (cfu/g)	≤500	<10	<10	<10
Molds (cfu/g)	≤500	20	<10	10
Enterobacteriaceae: (cfu/g)	≤1000	<10	<10	<10
Coliforms: (cfu/g)	≤100	<10	<10	<10
E. coli (per 1 g)	Absent	Negative	Negative	Negative
Salmonella (per 375 g)	Absent	Negative	Negative	Negative

Table 6. Analytical results for three non-consecutive lots of Heliaflor 55 Sunflower Protein Crisps

Parameter	Specifications	1801A0608	1904A1502	1908A1846
Protein (%)	≥50	53.3	52.6	52.0
Fat (%)	≤4	2.2	3.0	2.7
Moisture (%)	≤5	3.9	4.8	4.8
Lead (mg/kg)	≤0.2	<0.02	<0.015	<0.015
Mercury (mg/kg)	≤0.1	<0.010	<0.010	<0.010
Arsenic (mg/kg)	≤0.1	<0.04	<0.04	<0.04
Cadmium (mg/kg)	≤0.65	0.43	0.61	0.43
Total plate count (cfu/g)	≤10,000	450	190	2,300
Yeasts (cfu/g)	≤1000	<10	<10	<10
Molds (cfu/g)	≤1000	<10	20	30
Enterobacteriaceae: (cfu/g)	≤1000	50	20	<10
E. coli (per 1 g)	Absent	Negative	Negative	Negative
Salmonella (per 375 g)	Absent	Negative	Negative	Negative

It should be noted that numerous other analyses of the sunflower protein products have been conducted but are not included in the product specifications (e.g., pesticides, mycotoxins). Results of the pesticide analyses are provided in Appendix B. Given that the presence of mycotoxins has been associated with the source material, sunflower, analyses will be conducted on all new lots demonstrating aflatoxins (B1, B2, G1, and G2) and ochratoxin A are not present (see statement Appendix B). In summary, the analytical results confirm that the proposed sunflower protein products meet the analytical specifications, confirming that impurities/contaminants are not present at levels of toxicological concern. Of note, the manufacturing facility also processes ingredients that contain mustard seeds and cereals containing gluten. However, the facility has an allergen management program in place to mitigate the potential for cross contamination. Austrade, as part of their standard technical documentation, informs downstream customers of this to enable appropriate labeling of finished food products, if necessary.

Stability Data

Stability testing under extreme storage conditions (30°C and 65% relative humidity) was conducted on Heliaflor 45 sunflower protein. Testing showed that microbiological contamination was not adversely affected during storage under accelerated testing

conditions for up to 6 months and protein stability was maintained for at least 24 months (Table 7).

Table 7. Analytical results for shelf life stability of Heliaflor 45 Sunflower Protein

	Production Testing Date	Shelf-life Testing Date
Microbiological Testing	5/17/2016	11/21/2016
Total plate count (cfu/g)	500	30
Yeasts (cfu/g)	<10	<10
Molds (cfu/g)	100	10
Fat absorption [%]		80.7
Water absorption [%]		202.7
Protein Stability	6/15/2017	5/6/2020
Protein (g/100g)	47.0	47.4

Microbiological and protein evaluations of Heliaflor 55 Sunflower protein shortly before and after the 24-month expiration date show that the product is stable (Table 8).

Table 8. Analytical results for shelf life stability of Heliaflor 55 Sunflower Protein

	Shelf-life Testing Date	Shelf-life Testing Date
Microbiological Testing	12/2019 (10/2017 production)	3/2019 (5/2017 production)
Total plate count (cfu/g)	1900	240
Yeasts (cfu/g)	<10	<10
Molds (cfu/g)	<10	<10
Protein Stability	7/25/2018	6/5/2020
Protein (g/100g)	57.5	58.5

Stability testing under extreme storage conditions (30°C and 65% relative humidity) was conducted on Heliaflor 55 Sunflower Protein Crisps. Testing showed that microbiological contamination was not adversely affected during storage under accelerated testing conditions for up to 6 months and protein stability was maintained for at least 24 months (Table 9).

Table 9. Analytical results for shelf-life stability of Heliaflor 55 Sunflower Protein Crisps

	Production Testing Date	Shelf-life Testing Date
Microbiological Testing	**9/3/2018**	**3/13/2019**
Total plate count (cfu/g)	4300	
Yeasts (cfu/g)	40	
Molds (cfu/g)	130	
Fat absorption [%]	145.8	107.2
Water absorption [%]	118.5	165.8
Protein Stability	3/13/2018	5/20/2020
Protein (g/100g)	53.3	53.1

Austrade currently recommends that all Heliaflor products be stored at ambient temperatures away from direct light, heat, and moisture conditions. Given the similarities of the protein powders and crisps, if properly stored, the product should be used "within 24 months of production."

§ 170.235 Part 3, Dietary Exposure

Purpose

The focus of this GRAS determination is for food uses identical to what has been recognized in previous GRAS notifications (GRNs) for current plant-based protein sources such as canola (GRN Nos. 327, 386, 683; FDA, 2010, 2011, 2017a), hemp seed (GRN 771; FDA, 2018a), mung bean (GRN 684; FDA, 2017b), oat (GRN 575; FDA, 2015a), pea (GRN Nos. 182, 581, 608, 788, 803, 804, 851; FDA, 2005, 2015b, 2016a, 2018b, 2019a,b, 2020b), potato (GRN No. 447; FDA, 2013), rice (GRN Nos. 609, 848; FDA, 2016b, 2020a), soy (GRN No. 134; FDA, 2004), wheat (GRN Nos. 26 and 182; FDA, 1999, 2005), and fava bean protein isolate (FDA, 2020c). Similarly, sunflower protein is intended for use as a source of protein for enrichment of conventional foods.

As described in numerous GRNs, including GRN No. 386 for canola protein isolate and hydrolyzed canola protein isolate (FDA, 2011) and GRN No. 609 for rice protein (FDA, 2016b), the typical uses of protein for enrichment of foods include bakery products; snack foods; breakfast cereals; ready-to-drink beverages; fats and oils; soups and nutritional beverages such as smoothies, high-protein drinks, and milk shakes; powdered nutritional/protein beverages; nutrition bars; vegetarian food products (such as pea crisps); meat analogues; dairy and imitation dairy products; and meal replacements/nutritional bars. Table 10 summarizes the intended use categories and corresponding proposed maximum use levels for use of the sunflower protein as a source of protein for enrichment of conventional food.

Table 10. Proposed maximum food use levels[a]

Food Category	Maximum Use Level (%)
Bakery products (e.g., breads, rolls, doughnut, cookies, cakes, batters, muffins, pasta, cereal bars, etc.)	3
Snack foods (e.g., crackers, breakfast/energy bars, snack chips, etc.)	20
Ready-to-eat breakfast cereals	16
Beverages, soups, nutritional beverages (e.g., protein fortified soft drinks, fruit juices, high-protein drinks)	5
Fats and oils (margarine and salad dressings)	17
Dairy products (e.g., cheese, frozen dairy dessert, whipped topping, yogurt, coffee whiteners, etc.)	4
Dry instant milk shake mixes and protein drinks	9
Vegetarian food products (e.g., vegetable juice and smoothies) and meat analogues	20
Processed meat products (where the addition of vegetable proteins is acceptable, such as unspecified products or those that are included in the Standard of Identity)	7
Meal replacement/nutritional bars	30

[a] Table adapted from GRNs 386 (FDA, 2011) and 609 (FDA, 2016b)

As evident from the previously submitted GRNs on plant-derived proteins referenced above, the proposed use concentrations and variety of food uses, combined with the average daily consumption of the described foods, results in a calculated daily intake of the protein additives being a substantial fraction of the daily reference value (DRV) of 50 g/day (FDA, 2017c) and recommended daily allowance (RDA) of 46 grams/day for women over 19 years of age and 56 grams/day for men over 19 years of age (IOM, 2005). In addition, in some cases, the intake of total combined uses exceeded even those values at the 90th percentile consumption. However, the USDA (2015) Scientific Report of the 2015 Dietary Guidelines Advisory Committee reported that the 90th percentile intake of protein from food and beverages ranges from 89.0 to 132.9 g/day in adults age 19 years and older. Austrade's proposed sunflower protein ingredient is intended only to be an alternative source of protein for current uses in food. Therefore, a similar estimate of intake would be expected if sunflower protein were the only source of protein used in conventional foods. As was concluded in the other GRAS notifications, it is not realistically expected that the actual consumption of foods containing sunflower protein would result in daily consumption greater than the DRV or RDA for protein. It is reasonable to expect that most

of the population's intake of protein is, and will remain, in the form of unprocessed foods, including meat, poultry, fish, and legumes.

In summary, the proposed uses of sunflower protein will not increase the overall consumption of protein and will simply provide an alternative source of well-characterized protein from sunflower for use in food. Therefore, cumulative intake analysis is not considered necessary.

§ 170.240 Part 4, Self-Limiting Levels of Use

The use of sunflower protein in protein-enriched foods is considered to be self-limiting for technological reasons, such as product texture and/or flavor profile, either of which could affect consumer acceptance.

§ 170.245 Part 5, Experience Based on Common Use in Food

While the source material for the protein concentrate, sunflower, is naturally occurring, and the protein concentrate has been commonly added to food for human consumption, the statutory basis for our conclusion of the GRAS status in the notice is based on scientific procedures and not common use in food.

§ 170.250 Part 6, GRAS Narrative

History of Use and Regulatory Approvals

The sunflower (*Helianthus annuus*) is an annual plant in the family *Asteraceae* (synonym *Compositae*) and is native to western North America (CIR, 2016; Guo et al., 2017; National Sunflower Association, 2019). Use of sunflower as a food crop dates back thousands of years, with evidence suggesting that the plant was cultivated from approximately 3,000 B.C. by Native American tribes in the region that is now Arizona and New Mexico (Schneiter, 1997, as cited in National Sunflower Association, 2019). Flour produced by pounding sunflower seeds was used to make cakes, meal, and bread, and the seeds themselves were eaten as snacks, a practice that continues to the present day (Guo et al., 2017). Currently, sunflower is cultivated primarily for the seeds, which yield one of the world's most common sources of edible oil (CIR, 2016; Guo et al., 2017).

Sunflower seeds have also been used in some cultures as an important source of protein; they are reported to contain approximately 20–21 g protein/100g (Guo et al., 2017; National Sunflower Association, 2019; USDA, 2019). Sunflower seeds are also used to produce an alternative to peanut butter. It has also been reported that sunflower seed meal has more protein, than the seeds alone, ranging from 28% to 38% (CIR, 2016). The product that is the subject of the current GRAS determination is sunflower seed protein. Many different plant-derived proteins provide essential amino acids and have been well established as an important source of added protein in conventional food. Current sources of added protein used in food include protein from beans, peas, grains, vegetables, and seeds (FDA, 2017c). As discussed in Part 3, Dietary Exposure, the proposed uses of sunflower protein in the current GRAS determination will not increase the overall consumption of total dietary protein but will simply provide an alternative source of well-characterized protein from sunflower for use in food.

Extensive published information and data have been submitted to and reviewed by FDA as part of various GRNs for animal- and plant-based protein isolates and concentrates. Table 11 provides a summary list of plant-based GRAS notifications, all of which received "no objection" letters for their respective use(s) in food.

Table 11. GRAS notifications for plant-based proteins

GRN No	GRAS Substance	Year of Closure
879	Fava bean protein isolate	2020
851	Pea protein	2020
848	Pea and rice protein fermented by *Shitake mycelia*	2020
804	Pea protein	2019
803	Pea protein	2019
788	Pea protein concentrate	2018
771	Hemp seed protein	2018
684	Mung bean protein isolate	2017
683	Canola protein isolate	2017
609	Rice protein concentrate	2016
608	Pea protein concentrate	2016
581	Un-hydrolyzed and hydrolyzed pea protein	2016
575	Oat protein	2015
447	Potato protein isolates	2013
386	Canola protein isolate and hydrolyzed canola protein isolate	2011
327	Canola/rapeseed isolates	2010
182	Hydrolyzed wheat gluten isolate; pea protein isolate	2006
134	Soy protein with lecithin	2004
26	Isolated wheat protein	1999

FDA (2017c) has established a DRV for protein of 50 g/day for adults and children four or more years of age. The Institute of Medicine (IOM, 2005) has established an RDA of 56 g/day for adult males and 46 g/day for adult females. The World Health Organization indicated that physically active persons on normal diets easily exceed this level, and individuals involved in body building often consume much higher levels of protein (WHO, 2002). As a result, WHO recommends body-weight-based protein consumption rates for

both sexes. They indicated that the safe protein consumption level for a 40-kg adult is 33 g/day, and that for an 80-kg adult is 66 g/day. While a safe upper limit was not identified by WHO, the organization stated that it is unlikely that intakes of twice the safe level are associated with any risk. Of note, WHO (2002) issued caution regarding very high intakes of three to four times the safe intake, stating that such intakes cannot be assumed to be risk-free (WHO, 2002).

Safety

Introduction

As discussed above, multiple plant-derived proteins have been evaluated and deemed safe for human consumption by various entities. The composition of Austrade's sunflower protein that is the subject of the current GRAS determination is generally similar to that of other plant-derived protein concentrates previously notified to the FDA as GRAS. Table 12 provides an overview of the amino acid profile of sunflower seed meal, Austrade's sunflower seed protein concentrate products, and other GRAS-notified plant-based proteins. Only minor differences are noted in relative amounts of essential and non-essential amino acids present in the sunflower seed meal and sunflower seed protein concentrates. The proteins found in sunflower seed meal are the same as those found in the sunflower protein; the minor differences shown in Table 12 demonstrate that the amino acid profile of sunflower seeds is generally maintained after processing and is similar to other plant-based proteins on the market. These findings support the conclusion that there is no safety concern in regard to the proposed safety of the sunflower protein product and its use in food.

Given that sunflower and sunflower protein are common components of the human diet, limited traditional toxicology studies of sunflower protein were identified in the published domain. A comprehensive literature search through April 2021 was performed using the PubMed and Embase databases, as well as extensive searches of regulatory agency databases such as FDA, European Food Safety Authority (EFSA), and the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

Human Use

Sunflower seeds are considered a nutritious food source of protein, unsaturated fats, fiber, vitamins, minerals, and antioxidants (Guo et al., 2017). In addition to food uses (e.g., as a snack, garnish, and in baked goods), sunflower seeds are touted for their antioxidant, anti-bacterial, diuretic, expectorant, anti-microbial, anti-inflammatory, anti-hypertensive, wound-healing, and cardiovascular benefits (Guo et al., 2017). Traditional uses of sunflower seeds include for treatment of heart disease, pulmonary infections, coughs, and colds (Guo et al., 2017). Additionally, sunflower protein hydrolysate is recommended as part of the nutrition plan for individuals with liver disease, because it is hypoallergenic, palatable, and provides a high ratio of branched-chain amino acids to aromatic amino acids (Bautista et al., 2000).

Table 12. Comparison of amino acid profiles of related products

Amino Acid	Sunflower Seed Meal (*H. annuus*; range; g/100g)[A]	Austrade Sunflower Protein (mean; g/100g)	Oryzatein™ Rice Protein 80 (% of total)[B]	Mungbean (mean; % of total)[C]	Oat Protein (g/100g)[D]
Alanine	1.41–1.79	2.26	5.14	3.96	4.37
Arginine	2.32–3.17	4.20	6.37	7.80	7.17
Aspartic acid	2.66–3.56	4.71	8.21	12.34	7.48
Cysteine	0.50–0.71	0.60	1.88	0.34	2.45
Glutamic acid	5.97–7.86	10.09	15.22	18.38	22.5
Glycine	1.69–2.35	3.14	3.82	3.37	4.13
Histidine	0.61–1.18	1.29	1.84	2.87	2.22
Isoleucine	1.11–1.62	2.31	3.84	4.86	4.38
Leucine	1.78–2.48	3.29	7.23	8.58	8.42
Lysine	1.01–1.67	1.82	2.82	7.07	3.38
Methionine	0.56–0.89	1.08	2.45	1.29	2.23
Phenylalanine	1.28–1.85	2.54	4.74	6.90	4.68
Proline	1.11–1.33	2.16	3.95	4.44	5.95
Serine	1.11–1.66	1.98	4.24	5.30	10.00
Threonine	1.06–1.45	1.84	3.17	2.81	5.57
Tryptophan	0.34–0.50	0.64	0.99	0.95	3.98
Tyrosine	0.59–1.11	1.26	4.21	3.25	3.50
Valine	1.41–2.05	2.80	5.44	5.47	1.10

[A]Liu et al. (2015; range of 10 samples reported); CIR (2016; range of 5 samples reported)

[B]FDA (2016b), GRN 609

[C]FDA (2017ba), GRN 684

[D]FDA (2015a), GRN 575

Studies in Animals

Sunflower seeds have a long history of use as food; therefore, traditional toxicology studies of sunflower and sunflower seeds are limited. Given the available information and data on the safety of sunflower seeds, the conduct of toxicity studies was considered unnecessary and not an ethical use of animals. Of note, while some safety-related studies on other sunflower seed preparations were identified (e.g., extracts and oils), these have not been included in the current GRAS determination, because they contain many constituents other than protein. Therefore, studies in laboratory animals exposed to either sunflower protein or whole sunflower seeds are summarized below.

Repeated-Dose Toxicity

The potential oral toxicity of sunflower proteins was evaluated in a 90-day oral study in Shoe rats (Hoernicke et al., 1988[1]). Protein from sunflower seeds (Soviet origin) was extracted using five different methods. The crude protein contents of the five isolates (identified as Variants A–E) were found to be 74.2%, 48.3%, 57.9%, 48.6%, and 56.6%, respectively. Rats (20/sex/group) were administered sunflower protein in two different experiments. In the first, rats were fed a standard diet with 0, 25%, 50%, or 70% of the protein replaced by Variant A. In the second study, rats were fed a standard diet with 50% of the protein replaced with Variant B, C, D, or E. Rats were observed daily during the 90-day study, and body-weight gain and feed and water intake were recorded. While reference ranges were not provided in the manuscript, the authors noted that all values were within their respective normal ranges. Blood for hematology and clinical chemistry analyses was collected from 12/sex/group at the start, middle, and end of the study period. Organ weights and histopathology were performed on at least six rats/sex/group (brain, spinal cord, ischiadic nerve, pituitary gland, thyroid gland, thymus, adrenal gland heart, lungs, liver, kidney, spleen, stomach, duodenum, ileum, colon, pancreas, intestinal lymph nodes, urinary bladder, ovaries or testes, and thigh muscles).

In the first study, Variant A was administered at three dose levels; this sunflower protein was precipitated at pH 4.5 with the addition of hydrochloric acid, washed with water, neutralized with caustic soda, and dried in the fluidized bed (Hoernicke et al., 1988). No significant differences in cage-side observations, including fecal scores, were reported between groups. Food intake was similar between groups. Weight gain was increased in male rats fed sunflower protein; the authors noted this change to be significant, but statistics were not provided. No significant differences in hematological parameters were observed between groups, including erythrocyte, hemoglobin, hematocrit, and leukocyte counts. Males in the middle dose group had significantly reduced alanine aminotransaminase levels (ALT; 0.23 vs. 0.37 International Units per liter [IU/L]) compared to controls, however, this effect did not appear to be dose-dependent. Alkaline phosphatase (ALP) levels were reduced significantly in both sexes of the high-dose group; levels decreased with increased sunflower protein. No other significant changes in clinical chemistry parameters were reported (total protein, albumin, globulin, blood urea nitrogen, glucose, and aspartate

[1] This study was published in German. An English-language translation will be provided to FDA on request.

aminotransferase [AST]). Absolute and relative liver weights were reduced significantly in the middle-dose group (both sexes) relative to controls, but not in the low- or high-dose groups. In addition, some significant differences were noted in absolute and/or relative kidney weights; changes were inconsistent and were not observed in the high-dose group. No biologically relevant changes were observed in the histopathology, including findings in liver and kidney. The authors concluded that daily intake of sunflower protein isolate (Variant A with 74.2% protein) up to 13 g/kg-bw/day[2] was not associated with "any health impairment in 90-day test rats."

In the second study (Variants B-E), no significant differences in cage-side observations, including fecal scores, were reported between groups (Hoernicke et al., 1988). Food intake was similar between groups overall and was increased in males consuming Variants C–E (up to 17 g/kg-bw/day; statistics not provided). Weight gain was increased in male rats fed sunflower protein, but no significant changes in weight gain relative to controls were found. No significant differences in hematological parameters were observed between groups (data not shown). Albumin levels were increased in males of all sunflower protein groups, of which Variants C–E were increased significantly relative to controls. Globulin levels were decreased significantly in males of the Variant D and E groups. While aldolase was reduced significantly in males of the Variant E, relative to controls, lactate dehydrogenase was increased significantly in Variant E females. Finally, ALT levels were decreased in all sunflower protein groups, of which Variants C–E were decreased significantly relative to controls. The authors noted that there were no correlations with these findings and histological examination of the liver. Absolute kidney weight in males of the Variant D and E groups were significantly higher than those of control animals. Absolute and relative thyroid weights were increased in females of the Variant D group only.

While this publication provides contextual information on Variants B-E, no conclusions can be made with regard to their potential toxicity, because only one dose level was used for each. However, the toxicological data set on Variant A derived from the first study is considered representative, because this variant had the highest protein concentration. This study was conducted 40 years ago and with a rat strain that is not commonly used in modern-day studies. Nevertheless, the data can be used as corroborative information to support the safety assessment of sunflower protein for use in human food, as described in this GRAS determination.

Other Animal Studies

Canistro et al. (2017) investigated the *in vitro* digestibility and toxicity of rapeseed and sunflower protein hydrolysates (70.2% and 83.2% crude protein, respectively). The *in* vitro digestibility was found to be significantly higher in the protein hydrolysates than in their respective starting materials (defatted seed meals). In a separate *in vivo* study, male Swiss-Albino CD1 mice (eight/group) received one of three diets: (1) standard chow (control), (2) standard chow + 10% rapeseed protein hydrolysate, or (3) standard chow + sunflower

[2] The authors did not provide information on conversion of the dietary exposure level to a g/kg-bw basis for Study 1. However, based on the description provided for this same concept in Study 2, it is assumed that the measured food intake was used to calculate the 13 g/kg-bw/day.

protein hydrolysate, for 48 days. Body weight and food intake were recorded, and cage-side observations were recorded daily. Clinical chemistry analyses included glucose, creatinine, ALT, fructosamine, total cholesterol, triglycerides, and total plasma protein, albumin, and albumin/globulins. There were no significant differences in body-weight gain or food intake between groups. No toxicological signs, mortality, or abnormal behavior was observed in any group, including changes in symptoms related to respiratory (dyspnea, cyanosis, or apnea), nervous (convulsions, piloerection, or changes in motor function were shown), gastrointestinal (i.e., diarrhea or soft feces), or skin (dermatitis, alopecia). No statistically significant differences occurred in clinical chemistry parameters, and all values were within their respective physiological ranges. The authors concluded that the sunflower protein hydrolysate diet was well tolerated in mice.

While not a traditional toxicology study, the effect of sunflower protein (plant part not specified) in the diet of rats was investigated by Sautier et al. (1983). Male Wistar rats (eight/group) were fed *ad libitum* (for 49 days) standard diets containing protein (230 g) from one of four sources: casein, whey protein, soybean protein, or sunflower protein. There were no differences in energy intake, body weight, fecal excretion, or serum triglycerides between groups. Compared to casein, whey, soya-bean and sunflower proteins decreased the serum high-density lipoprotein (HDL) levels. No statistical differences were found in the organ weights of liver, thymus, adrenal, kidney, spleen, and adipose tissue. No adverse findings were reported in this study.

Allergy

Sunflower is not listed by the FDA under the Food Allergen Labeling and Consumer Protection Act of 2004 (Public Law 108-282, Title II).

The potential for sunflower (*Helianthus annuus*)-derived ingredients, including seed, seedcake, and seed flower, to cause sensitization and subsequent allergic reactions was reviewed in detail recently by the Cosmetic Ingredient Review (CIR) Panel (2016). In its report, the CIR Panel summarizes the relevant human and animal data considered in its extensive review. As reviewed by CIR (2016), available studies demonstrate various sunflower seed extracts to be negative for dermal sensitization in laboratory animal and human clinical tests. The CIR Expert Panel also reviewed several case reports of individuals demonstrating a food allergy to sunflower seeds confirmed clinically (e.g., skin-prick tests or food challenges). In addition, the Panel discussed the incidence of sensitization via inhalation to sunflower plants and/or seeds. CIR (2016) noted that sunflower seeds contain 2S albumins, which are known to induce immunoglobulin E (IgE)-mediated responses and are associated with allergenicity of other seeds, including rapeseed, brazil nuts, and walnuts. The Panel concluded that the incidence of individuals with sensitivity to sunflower-derived ingredients is low and determined that "the evidence does not warrant a heightened level of public concern or a warning label for seed or tree nut allergic individuals." However, the Panel emphasized that "persons with sensitivity to 2S albumins from seeds, nuts, or legumes should be cautious when using formulations that contain *Helianthus annuus* (sunflower)-derived ingredients." While the CIR Panel evaluated sunflower and its derivatives for their use in cosmetics, available data relevant

to the oral route of exposure were also reviewed, and thus are pertinent to this GRAS assessment for sunflower protein.

In addition to those studies reviewed by the CIR Expert Panel, other case reports were identified in an updated literature search, as summarized below:

- Barbarroja-Escudero et al. (2018) reported two cases of anaphylaxis involving lipoproteins from sunflower seeds.
- Asero et al. (2004) reported on a single individual with allergy to airborne allergens from sunflower seed.
- Ukleja-Sokołowska et al. (2016) reported a single case of an individual allergic to mugwort pollen who had an anaphylactic reaction as a result of ingesting sunflower seeds.
- Galleani et al. (2021) reported the outcome of a retrospective case series on 117 patients having a positive allergy test to sunflower seed.

Recently, Patel and Bahna (2016) reviewed the available literature from PubMed and Google Scholar on selected edible seeds, including sunflower seeds, from 1930–2016. The authors noted that a methionine-rich 2S albumin may be the major allergen in sunflower seed, while other studies suggested a lipid transfer protein with a molecular weight of 13 kDA as a potential sunflower seed allergen. Chapman et al. (2006) published an update on food allergens and also noted that members of the 2S albumin family of proteins have been demonstrated as allergens in sunflower.

Based on the available data, primarily limited case reports, hypersensitivity to sunflower seeds is considered to be rare (Patel and Bahna, 2016). As with any food product containing a potential allergen, it is proposed that ingredient labeling on any of the final Austrade sunflower protein products clearly identify such potential allergens. Thus, the food product ingredient lists would state the presence of a sunflower protein ingredient, and individuals who wish to avoid sunflower protein consumption for any reason would be able to identify the presence of a sunflower-derived ingredient. However, the rare occurrence of a sunflower allergy does not preclude a finding that the sunflower protein is safe and GRAS.

Other Safety Considerations

Excessive Protein Intake

As discussed in Part 3, Dietary Exposure, the DRV and RDA for protein are approximately 50 grams/day for adult women and men (FDA, 2017c; IOM, 2005). However, the USDA (2015) Scientific Report of the 2015 Dietary Guidelines Advisory Committee reported that the 90th percentile intake of protein from food and beverages ranges from 89.0 to 132.9 g/day in adults age 19 years and older. WHO (2002) recommends body-weight-based protein consumption rates; for example, the safe protein consumption level for a 40¬kg adult is 33 g/day, and that for an 80-kg adult is 66 g/day. In terms of nitrogen, WHO

(2002) indicates that the median adult protein requirement is 105 mg nitrogen/kg/day, and the 97.5 percentile value is 132 mg nitrogen/kg/day.

The potential toxicity of extremely high protein intake has been demonstrated in some populations. For example, preterm infants fed high-protein formula exhibited poor feeding, fever, lethargy, and low IQ scores at 3- and 6-year evaluations (Goldman et al., 1971). In addition, extreme protein intake in a case study of adults consuming diets consisting of 45% of the dietary energy as protein (from rabbit meat) experienced diarrhea and nausea after 3 days, and ultimately death within a few weeks (Speth and Spielmann, 1983). While these studies are worth reviewing, they are not considered to be relevant to the safety assessment of the sunflower protein. The sunflower protein product that is the subject of the current GRAS determination is not intended for use in infant formula, and its proposed food use would be expected to result in consumption amounts well below the safe protein ingestion levels cited above.

Renal Function

In some cases, excess protein intake has been found to advance chronic kidney disease due to increased glomerular pressure and hyperfiltration (Martin et al., 2005; WHO, 2002). Specifically, an increase in protein consumption can be associated with increased excretion of urea and creatinine, as a result of increased renal blood flow causing a higher glomerular filtration rate. A comprehensive review of relevant literature by Martin et al. (2005) noted that a high-protein diet (defined as ≥1.5 g/kg-day, approximately double the current recommended intake level set by IOM), which leads to a renal solute load in excess of the kidneys' excretory function, can contribute to progressive kidney failure in patients with existing kidney disease. However, the authors concluded that the existing evidence does not indicate an adverse effect of high protein consumption on renal function in healthy individuals. This conclusion is supported by studies indicating that resulting hyperfiltration is a normal adaptive response to increased demands for renal clearance due to higher nitrogen load.

WHO (2002) also addresses the potential for a high-protein diet to lead to an increased incidence of kidney-stone formation. While some data from clinical studies suggest that very high intake levels of animal protein have been shown to produce increased urinary calcium and oxalate levels, WHO (2002) stated that conclusions cannot be drawn from these studies (intake levels 80–185 g protein/day). For individuals at risk of developing kidney stones, WHO (2002) recommended a safe level of protein intake (0.83 g/kg-day), preferably from vegetable sources, but not high levels (>1.4 g/kg/day).

As discussed previously, the proposed use of Austrade's sunflower protein product would be expected to result in intake levels well below those associated with renal effects.

Basis for the GRAS Determination

Introduction

The regulatory framework for determining whether a substance can be considered GRAS in accordance with section 201(s) (21 U.S.C. § 321(s)) of FD&C Act (21 U.S.C. § 301 et. Seq.) ("the Act") is set forth at 21 CFR 170.30, which states:

> General recognition of safety may be based only on the view of experts qualified by scientific training and experience to evaluate the safety of substances directly or indirectly added to food. The basis of such views may be either (1) scientific procedures or (2) in the case of a substance used in food prior to January 1, 1958, through experience based on common use in food. General recognition of safety requires common knowledge about the substance throughout the scientific community knowledgeable about the safety of substances directly or indirectly added to food.
>
> General recognition of safety based upon scientific procedures shall require the same quantity and quality of scientific evidence as is required to obtain approval of a food additive regulation for the ingredient. General recognition of safety through scientific procedures shall ordinarily be based upon published studies, which may be corroborated by unpublished studies and other data and information.

These criteria are applied in the analysis below to determine whether the use of sunflower protein in food for human consumption is GRAS based on scientific procedures. All data used in this GRAS determination are publicly available and generally known, and therefore meet the "general recognition" standard under the FD&C Act.

Safety Determination

The subject of this GRAS determination is the use of sunflower protein as a source of protein for enrichment of conventional foods, identical to the food use of other plant-derived proteins previously notified as GRAS to the FDA. Sunflower and sunflower-derived products, including sunflower protein, have a long history of use in human food dating back thousands of years (CIR, 2016; Guo et al., 2017; National Sunflower Association, 2019).

Humans have safely consumed proteins from various food sources for many years, such as meats, dairy, fruits, vegetables, nuts, seeds, and other natural, plant-based sources of protein concentrates such as canola, potato, rice, soy, and wheat. Extensive published information and data have been submitted to and reviewed by FDA as part of various GRNs for animal- and plant-based protein isolates and concentrates (see Table 11). Based on intake data submitted in previous GRNs for plant-derived proteins, the proposed uses result in calculated daily intakes of the protein additives being a substantial fraction of the DRV

of 50 g/day (FDA, 2017c) and RDA of 46 grams/day for women over 19 years of age, and 56 grams/day for men over 19 years of age (IOM, 2005). However, the USDA (2015) Scientific Report of the 2015 Dietary Guidelines Advisory Committee reported that the 90th percentile intake of protein from food and beverages ranges from 89.0 to 132.9 g/day in adults age 19 years and older.

Austrade's proposed sunflower protein ingredient is intended only to be an alternative source of protein for current protein uses in food. Therefore, a similar estimate of intake would be expected if this specific sunflower protein was the only source of protein used in conventional foods. As was concluded in the other GRAS notifications, it is not realistically expected that the actual consumption of foods containing sunflower protein would result in daily consumption greater than the DRV or RDA for protein. It is reasonable to expect that most of the population's intake of protein is, and will remain, in the form of unconventional foods, including meat, poultry, fish, and legumes. The proposed uses of sunflower protein will not increase the overall consumption of protein but will simply provide an alternative source of well-characterized protein from sunflower for use in food.

The composition of Austrade's sunflower protein(s) that is the subject of the current GRAS determination is similar to that of other plant-based proteins that have been notified to the FDA as GRAS (see Table 12). As with the present GRAS determination, in most of the existing GRNs, data on the source materials were used to support the safe use of their respective proteins. In addition, where toxicological data were available, these were also used to support the safe use of plant-based proteins for use in human food. For example, several animal studies on canola proteins are summarized in GRNs 386 and 683, including a 90-day dietary studies in rats and various mutagenicity studies. In addition, GRNs 788 and 608 reported the outcome of genotoxicity and subchronic toxicity studies on pea proteins.

In addition, only minor differences are noted in relative amounts of essential and non-essential amino acids present in sunflower seed meal and sunflower protein. The proteins found in sunflower seed meal are the same as those found in the sunflower protein; the minor differences shown in Table 12 demonstrate that the amino acid profile of sunflower protein is generally maintained after processing and is similar to other plant-based proteins on the market. These findings support the conclusion that there is no safety concern in regard to the proposed sunflower protein product and its use in food.

Based on its composition (≥41% sunflower protein), the sunflower protein would not be expected to have toxicokinetic properties different from other sunflower- and plant-derived protein products that have already been determined to be GRAS for human consumption. Other constituents of sunflower seeds do not present any concerns related to safety and include unsaturated fats, fiber, vitamins, minerals, and antioxidants (CIR, 2016; Guo et al., 2017). Therefore, this protein product derived from *H. annuus* is not expected to present any concerns related to safety for human consumption. This conclusion is corroborated by several *in vivo* studies in rats and mice in which no adverse effects were observed following consumption of sunflower proteins and hydrolysates for 48–90 days (Canistro et al., 2017; Hoernicke et al., 1988; Sautier et al., 1983).

A subchronic oral toxicity study has been published by Hoernicke et al. (1988). In this study, the potential oral toxicity of five different sunflower proteins was evaluated in Shoe rats. One of the isolates (Variant A, containing 74.2% protein) was tested in a standard diet with 0, 25%, 50%, or 70% of the protein replaced by sunflower protein. The authors concluded that the highest dose, up to 13 g/kg-bw/day[3], was not associated with "any health impairment in 90-day test rats."

The potential for *H. annuus* and its derivatives, including sunflower protein, to cause sensitization and subsequent allergic reactions has been summarized in detail in review articles (Patel and Bahna, 2016). Based on these reviews, as well as other published data reviewed as part of the current GRAS determination, sunflower protein is not considered to be a concern with regard to sensitization and allergic reaction. However, as with any food product containing a potential allergen, it is proposed that ingredient labels for Austrade's sunflower protein clearly identify any such contents in the final products. Thus, food product ingredient lists would state the presence of a sunflower protein ingredient, so that individuals who wish to avoid sunflower protein consumption for any reason would be able to identify the presence of a sunflower-derived ingredient. However, rare occurrence of a sunflower allergy does not preclude a finding that the sunflower protein is safe and GRAS.

In conclusion, the publicly available scientific literature on sunflower, sunflower protein, and other plant-based protein products, and their use as a source of dietary protein in a variety of food products, reviewed as part of this GRAS assessment, is considered sufficient to support the safe use of Austrade's sunflower protein for the proposed intended uses described herein. The long history of global human consumption of sunflower seeds (and the protein contained therein) as food, and the safety of the concentrated protein ingredient derived from them, is supported by their consumption and general lack of toxicity. As would be expected for a food that has been consumed by humans for centuries, sunflower seeds and their proteins have been subjected to limited traditional toxicology studies. However, the available summarized data in this dossier on sunflower protein support its safe use in foods.

[3] The authors did not provide information on the conversion of the dietary exposure level to a g/kg-bw basis for Study 1. However, based on the description provided for this same concept in Study 2, it is assumed that the measured feed intake was used to calculate the 13 g/kg-bw/day.

General Recognition of the Safety of Sunflower Protein

The intended use of sunflower protein has been determined to be safe through scientific procedures, as set forth in 21 CFR § 170.3(b), thus satisfying the so-called "technical" element of the GRAS determination and is based on the following:

- The sunflower proteins that are the subject of this notification are naturally derived from *Helianthus annuus.* The sunflower protein product is manufactured in a manner consistent with current cGMP for food (21 CFR Part 110). The raw materials and processing aids used in the manufacturing process are food grade and/or approved for use as in food.
- Austrade's proposed sunflower protein ingredient is intended only to be an alternative source of protein for current uses in food. As was concluded in the other GRAS notifications, it is not realistically expected that the actual consumption of foods containing sunflower protein would result in daily consumption greater than the DRV or RDA for protein. The proposed uses of sunflower protein will not increase the overall consumption of protein but will simply provide an alternative source of well-characterized protein from sunflower for use in food.
- Sunflower and sunflower-derived products, including sunflower protein, have a long history use in human food, dating back thousands of years. In addition, humans have safely consumed proteins from many food sources for many years, such as meats, dairy, fruits, vegetables, nuts, seeds, and other natural, plant-based sources of protein concentrates such as canola, potato, rice, soy, and wheat.
- The composition of Austrade's sunflower protein is generally similar to that of other plant-based proteins previously notified to the FDA as GRAS. Only minor differences are noted in relative amounts of essential and non-essential amino acids present in sunflower seed meal and sunflower protein, demonstrating that the amino acid profile of sunflower is generally maintained after processing.
- Other constituents of sunflower seeds do not present any concerns related to safety and include unsaturated fats, fiber, vitamins, minerals, and antioxidants. For these reasons, this protein product derived from *H. annuus* is not expected to present any concerns related to safety for human consumption. This conclusion is corroborated by several *in vivo* studies in rats and mice in which no adverse effects were observed following consumption of sunflower protein or hydrolysates for 48–90 days (Canistro et al., 2017; Hoernicke et al., 1988; Sautier et al., 1983). No adverse effects were associated with exposure to a sunflower protein at the maximum dose tested (up to 13 g/kg-bw/day) for 90 days in rats (Hoernicke et al., 1988).
- Sunflower seed allergy is rare and the potential of sunflower protein to cause allergy would be expected to be very low at the levels of intended use. However, any potential concern for an allergic reaction in already sensitive individuals

would be addressed, because the food product ingredient lists would state the presence of a sunflower-derived ingredient.

- The long history of global human consumption of sunflower seeds as food (and the protein contained therein) and the publicly available scientific literature on sunflower seeds, sunflower protein, and other plant-based protein products, and their use as a source of dietary protein in a variety of food products, reviewed as part of this GRAS assessment is considered sufficient to support the safe use of Austrade's sunflower protein for the proposed intended uses described herein.

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.

Determination of the safety and GRAS status of sunflower protein that is the subject of this self-determination has been made through the deliberations of an Expert Panel convened by Austrade, Inc., and composed of Michael Carakostas, DVM, Ph.D.; Stanley M. Tarka, Jr., Ph.D., A.T.S.; and Thomas Vollmuth, Ph.D. These individuals are qualified by scientific training and experience to evaluate the safety of substances intended to be added to foods. They have critically reviewed and evaluated the publicly available information summarized in this document[4] and have individually and collectively concluded that sunflower protein, produced in a manner consistent with GMP and meeting the specifications described herein, is safe under its intended conditions of use. The Panel further unanimously concluded that the use of sunflower protein is GRAS based on scientific procedures, and that other experts qualified to assess the safety of foods and food additives would concur with these conclusions. The Panel's GRAS opinion is included as Exhibit 1 to this document.

It is also Austrade's opinion that other qualified scientists reviewing the same publicly available toxicological and safety information would reach the same conclusion. Austrade has concluded that sunflower protein is GRAS under the intended conditions of use, on the basis of scientific procedures, and therefore, it is excluded from the definition of a food additive and may be marketed and sold for its intended purpose in the U.S. without the promulgation of a food additive regulation under Title 21 of the CFR.

Austrade is not aware of any information that would be inconsistent with a finding that the proposed use of sunflower protein in food for human consumption meeting appropriate specifications, and used according to GMP, is GRAS. Recent reviews of the scientific literature revealed no potential adverse health concerns.

[4] The GRAS panel reviewed an earlier version of this dossier in which the literature search was conducted through November 2019. The updated literature search through May 2021 revealed only a few new studies of potential relevance, with no impact on the overall findings and conclusions previously reached by the panel.

§ 170.250 Part 7, Supporting Data and Information

The following references are all generally available, unless otherwise noted. The analytical data (Appendices A [amino acid data only] and B) and Exhibit 1 (signed Expert Panel report) are not generally available but are attached for reference.

References

Asero R, Mistrello G, Roncarolo D, Amato S. 2004. Airborne allergy to sunflower seed. J Invest Allergol Clin Immunol 14(3):244–246.

Barbarroja-Escudero J, Sánchez-González MJ, Pineda F, Rodríguez-Rodríguez M, Antolín-Amérigo D, Castillo M, Alvarez-Mon M. 2018. Identification of lipoproteins from sunflower seeds in 2 monosensitized anaphylaxis patients. J Investig Allergol Clin Immunol 28(5):334–336.

Bautista J, Corpas R, Cremades O, Hernández-Pinzón I, Ramos R, Villanueva A, et al. 2000. Sunflower protein hydrolysates for dietary treatment of patients with liver failure. J Am Oil Chem Soc77:121–126.

Canistro D, Vivarelli F, Ugolini L, Pinna C, Grandi M, Antonazzo IC, et al. 2017. Digestibility, toxicity and metabolic effects of rapeseed and sunflower protein hydrolysates in mice. Ital J An Sci 16(3):462–473.

Chapman JA, Bernstein IL, Lee RE, Oppenheimer J (Chief Eds). 2006. Food allergy: A practice parameter. Ann Allerg, Asthma, Immunol 96(3):S1–S68.

CIR (Cosmetic Ingredient Review). 2016. Safety assessment of *Helianthus annuus* (sunflower)-derived ingredients as used in cosmetics. Final Report.

FDA (U.S. Food and Drug Administration). 1999. GRN No. 26. GRAS assessment of isolated wheat protein.

FDA (U.S. Food and Drug Administration). 2004. GRN No. 134. GRAS Notification for soy protein hydrolysate with enzyme-modified lecithin.

FDA (U.S. Food and Drug Administration). 2005. GRN 182. GRAS Assessment of plant proteins in winemaking (hydrolyzed wheat gluten isolate; pea protein isolate).

FDA (U.S. Food and Drug Administration). 2010. GRN No. 327. GRAS Notification for cruciferin-rich canola/rapeseed and napin-rich canola/rapeseed protein isolate.

FDA (U.S. Food and Drug Administration). 2011. GRN No. 386. GRAS Assessment of canola protein isolate and hydrolyzed canola protein isolate.

FDA (U.S. Food and Drug Administration). 2013. GRN 447. GRAS Assessment of potato protein isolates.

FDA (U.S. Food and Drug Administration). 2015a. GRN 575. GRAS Assessment of oat protein.

FDA (U.S. Food and Drug Administration). 2015b. GRN 581. GRAS Assessment of pea protein.

FDA (U.S. Food and Drug Administration). 2016a. GRN 608. GRAS Assessment of pea protein concentrate.

FDA (U.S. Food and Drug Administration). 2016b. GRN 609. GRAS Assessment of rice protein.

FDA (U.S. Food and Drug Administration). 2017a. GRN 683. GRAS Assessment of canola protein isolate.

FDA (U.S. Food and Drug Administration). 2017b. GRN 684. GRAS Assessment of mung bean protein isolate.

FDA (U.S. Food and Drug Administration). 2017c. Nutrient Facts Label: Protein.

FDA (U.S. Food and Drug Administration). 2018a. GRN 771. GRAS Assessment of hemp seed protein.

FDA (U.S. Food and Drug Administration). 2018b. GRN 788. GRAS Assessment of pea protein concentrate.

FDA (U.S. Food and Drug Administration). 2019a. GRN 803. GRAS Assessment of pea protein.

FDA (U.S. Food and Drug Administration). 2019b. GRN 804. GRAS Assessment of pea protein.

FDA (U.S. Food and Drug Administration). 2018b. GRN 788. GRAS Assessment of pea protein concentrate.

FDA (U.S. Food and Drug Administration). 2020a. GRN 848. GRAS Assessment of pea and rice protein fermented by *Shitake mycelia*.

FDA (U.S. Food and Drug Administration). 2020b. GRN 851. GRAS Assessment of pea protein.

FDA (U.S. Food and Drug Administration). 2020c. GRN 879. GRAS Assessment of fava bean protein isolate.

Galleani C, Diego MC, Crespo JF. 2021. Sunflower Seed Allergy: A Case Series. J Investig Allergol Clin Immunol 147(2), Supplement (AB94).

Goldman HI, Liebman OB, Freudenthal R, Reuben R. 1971. Effects of early dietary protein intake on low-birth-weight infants: Evaluation at 3 years of age. J Pediat 78:126–129.

Guo S, Ge Y, Na Jom K. 2017. A review of phytochemistry, metabolite changes, and medicinal uses of the common sunflower seed and sprouts (Helianthus annuus L.). Chem Cent J 11(1):95, doi:10.1186/s13065-017-0328-7.

Hoernicke E, Lewerenz HJ, Mieth G. 1988. [Animal experimento-toxicologic studies of protein isolates in sunflower seeds]. Nahrung 32(7):691–700 (original article in German; English translation obtained).

IOM (Institute of Medicine). 2005. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. Washington, DC: The National Academies Press. https://doi.org/10.17226/10490.

Liu JD, Li QY, Zeng ZK, et al. Determination and prediction of the amino acid digestibility of sunflower seed meals in growing pigs. Asian-Australas J Anim Sci 28(1):86–94, doi:10.5713/ajas.14.0109.

Martin WF, Armstrong LE, Rodriguez NR. 2005. Dietary protein intake and renal function. Nutr Metab (Lond) 2(25), doi:10.1186/1743-7075-2-25.

National Sunflower Association. 2019. Association home page: https://www.sunflowernsa.com/.

Patel A, Bahna SL. 2016. Hypersensitivities to sesame and other common edible seeds. Allergy 71(10):1405–1413.

Sautier C, Dieng K, Flament C, Doucet C, Suquet JP, Lemonnier D. 1983. Effects of whey protein, casein, soya-bean and sunflower proteins on the serum, tissue and faecal steroids in rats. Br J Nutr 49(3):313–319.

Speth JD, Spielmann KA. 1983. Energy source, protein metabolism, and hunter gatherer subsistence strategies. J Anthropol Archaeol 2:1–31.

Ukleja-Sokołowska N, Gawrońska-Ukleja E, Żbikowska-Gotz M, Bartuzi Z, Sokołowski Ł. 2016. Sunflower seed allergy. Int J Immunopathol Pharmacol 29(3):498–503.

USDA (U.S. Department of Agriculture). 2015. Usual intakes from food and beverages 2007-2010 compared to dietary reference intakes. Appendix E-2: Supplementary documentation to the 2015 the scientific report of the 2015 Dietary Guidelines Advisory Committee. Available from: https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/advisory-report/appendix-e-2.

USDA (U.S. Department of Agriculture). 2019. FoodData Central. Seeds, sunflower seed kernels, dried. Available at: https://fdc.nal.usda.gov/fdc-app.html#/food-details/170562/nutrients.

WHO (World Health Organization). 2002. Technical Report Series 935: Protein and amino acid requirements in human nutrition. Report of a Joint WHO/FAO/UNU Expert Consultation.

APPENDIX A

Product Specifications and Nutritional Composition Data

APPENDIX B

Analytical Results

EXHIBIT 1

Report of the Expert Panel

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

ORGANIC SUNFLOWER PROTEIN EXTRUDATE

GENERAL DESCRIPTION

Organic Sunflower Protein Extrudate is produced out of Organic Sunflower Protein by dry extrusion process. Product is a vegan meat substitute, especially for vegan minced meat preparations.
Certified organic under the US-EU Organic Equivalency Arrangement by Prüfverein Verarbeitung e.V., Germany.

- Appearance: slightly brown
- Odor, taste: product typical
- Ingredient: 100 % Organic Sunflower Protein
- Botanical name: Helianthus Annuus Seed Protein

ANALYSIS DATA per 100 g

Calorific value:	approx. 323 kcal (1,359 kJ)
Protein content absolute:	min. 50 g
Total Carbohydrates:	max. 36 g
Carbohydrates:	max. 6 g
Dietary fibers:	max. 22 g
Sugar:	max. 8 g
Added sugar:	0 g
Fat:	max. 4 g
Monounsaturated fatty acids:	max. 1.5 g
Polyunsaturated fatty acids:	max. 1.5 g
Saturated fatty acids:	max. 1 g
Trans fatty acids:	max. 0.01 g
Salt:	max. 0.01 g
Sodium:	max. 0.004 g
Vitamin A:	0.00 mg
Vitamin D:	0.00 µg
Calcium:	min. 250 mg
Potassium:	min. 1,500 mg
Moisture:	max. 5 %
Particle size:	0,5 to 1 cm diameter

Above mentioned nutritional values are average values.

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Product Specification
ORGANIC SUNFLOWER
PROTEIN EXTRUDATE

MICROBIOLOGY

Total plate count (TPC):	max. 10,000
Mold:	max. 1,000
Yeasts:	max. 1,000
Enterobacteriaceae:	max. 1,000
Salmonella (per 375g):	absent
E. coli (per 1g):	absent

APPLICATIONS

- Vegan meat substitute

ALLERGENS

- This product is made from 100 % Organic Sunflower Seeds
- Gluten < 20 ppm

STORAGE AND MINIMUM SHELF-LIFE

Storage: Cool, dry, protected against direct light
Shelf life: When properly stored in original, closed packaging: 24 months from production date

PACKAGING

- 76 g net weight carton and inner pouch

ORIGIN

- Product of Germany (European Union)

LABELING

- Organic Sunflower Protein Extrudate

Depending on agricultural conditions and species the above values are subject to natural fluctuations.
This specification does not release the purchaser of our products from his duty of care and responsibility.

AOT Quality Assurance. Established by computer, therefore no signature.
Wiggensbach, 11.10.2018

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Product Specification
ORGANIC SUNFLOWER PROTEIN

HELIAFLOR™ 55
ORGANIC SUNFLOWER PROTEIN 55 %

GENERAL DESCRIPTION

Organic peeled sunflower seeds are partially defatted by a special patent pending production process. The obtained sunflower seed press cake is CO_2 extracted and finally pulverized by a special product friendly method: oxygen-free and temperature-controlled.
Certified organic under the US-EU Organic Equivalency Arrangement by Prüfverein Verarbeitung e.V., Germany.

- Appearance: white to beige powder
- Odor, taste: product typical
- Ingredient: 100 % Organic Sunflower Protein
- Botanical name: Helianthus Annuus Seed Extract

ANALYSIS DATA per 100 g

Calorific value:	approx. 305 kcal (1,300 kJ)
Protein content absolute:	min. 51 g
Total Carbohydrates:	max. 38 g
Carbohydrates:	max. 7 g
Dietary fibers:	max. 23 g
Sugar:	max. 8 g
Added sugar:	0 g
Fat:	max. 2.5 g
Monounsaturated fatty acids:	max. 0.8 g
Polyunsaturated fatty acids:	max. 1 g
Saturated fatty acids:	max. 0.7 g
Trans fatty acids:	max. 0.01 g
Salt:	max. 0.01 g
Sodium:	max. 0.004 g
Vitamin A:	0.00 mg
Vitamin D:	0.00 µg
Calcium:	min. 250 mg
Potassium:	min. 1,500 mg
Iron:	min. 7 mg
Folate:	min. 200 µg
Moisture:	max. 10 %
Sieve analysis:	min. 85 % <180 µm (80 mesh)

Above mentioned nutritional values are average values.

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Product Specification
ORGANIC SUNFLOWER PROTEIN

MICROBIOLOGY

Total plate count (TPC):	max. 10,000
Mold:	max. 500
Yeasts:	max. 500
Enterobacteriaceae:	max. 1,000
Coliforms:	max. 100
Salmonella (per 375g):	absent
E. coli (per 1g):	absent
Listeria monocytogenes (per 25g):	absent

HEAVY METALS

Arsenic:	max. 0.1 ppm
Cadmium:	max. 0.65 ppm
Lead:	max. 0.2 ppm
Mercury:	max. 0.1 ppm

APPLICATIONS

- Vegan/vegetarian foods and beverages
- Plant/vegetable based shakes, spreads, desserts
- Meat replacement in sausage and meat products
- Chocolates, bars and cereals
- Sauces, cremes, dressings
- Nutritional supplements
- In cosmetics as emulsifier, peeling agent and texturizer

ALLERGENS

- This product is made from 100 % Organic Sunflower Seeds
- Gluten < 20 ppm

STORAGE AND MINIMUM SHELF-LIFE

Storage: Cool, dry, protected against direct light
Shelf life: When properly stored in original, closed packaging: 24 months from production date

PACKAGING

- 20 kg (44.09 lb) net weight cartons with inner PE bag

ORIGIN

- Product of Germany (European Union)

LABELING

- Organic Sunflower Protein

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Product Specification
ORGANIC SUNFLOWER PROTEIN

Depending on agricultural conditions and species the above values are subject to natural fluctuations.
This specification does not release the purchaser of our products from his duty of care and responsibility.

AOT Quality Assurance. Established by computer, therefore no signature.
Wiggensbach, 23.01.2019

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

AMINO ACID PROFILE

Product: Heliaflor® 55, organic, Sunflower protein

Total protein content (absolute mean value): 53.3 g/100 g

Calculated PDCAAS: 73

Amino Acid Profile		
Histidin	g /100 g	1,42
Isoleucin	g /100 g	2,49
Leucin	g /100 g	3,58
Lysin	g /100 g	1,97
Methionin	g /100 g	1,16
Phenylalanin	g /100 g	2,73
Tyrosin	g /100 g	1,36
Threonin	g /100 g	1,99
Valin	g /100 g	3,04
Alanin	g /100 g	2,49
Arginin	g /100 g	4,65
Aspartic acid	g /100 g	5,07
Glutamic acid	g /100 g	10,85
Glycine	g /100 g	3,42
Proline	g /100 g	2,25
Serine	g /100 g	2,15
Cystine	g /100 g	0,67
Tryptophan	g / 100g	0,83

Above mentioned values are average values. Variations are possible because it´s a natural product.

AOT Quality Assurance. Established by computer, therefore no signature.
Wiggensbach, 29.10.2018

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

AMINO ACID PROFILE

Product: Heliaflor® 45, organic, Sunflower protein

Total protein content (absolute mean value): 47.6 g/100 g

Calculated PDCAAS: 68

Amino Acid Profile		
Histidin	g /100 g	1.15
Isoleucin	g /100 g	2.12
Leucin	g /100 g	3.00
Lysin	g /100 g	1.67
Methionin	g /100 g	0.99
Phenylalanin	g /100 g	2.34
Tyrosin	g /100 g	1.16
Threonin	g /100 g	1.68
Valin	g /100 g	2.56
Alanin	g /100 g	2.02
Arginin	g /100 g	3.74
Aspartic acid	g /100 g	4.35
Glutamic acid	g /100 g	9.33
Glycine	g /100 g	2.85
Proline	g /100 g	2.07
Serine	g /100 g	1.81
Cystine	g /100 g	0.52
Tryptophan	g / 100g	0.45

Above mentioned values are average values. Variations are possible because it´s a natural product.

AOT Quality Assurance. Established by computer, therefore no signature.
Wiggensbach, 01.07.2019

ALL ORGANIC TREASURES GmbH – Pflanzliche Bio Öle & Bio Proteine
Am Mühlbach 38 - D-87487 Wiggensbach Tel: 0049-(0)8370-922 80-0 Fax: 0049-(0)8370-922 80-99
E-Mail: info@aot.de Website: www.aot.de
Registergericht Kempten HRB 8191 USt-Id Nr.: DE 813 705 446

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Product Specification
ORGANIC SUNFLOWER PROTEIN

HELIAFLOR™ 45
ORGANIC SUNFLOWER PROTEIN 45 %

GENERAL DESCRIPTION

Organic peeled sunflower seeds are partially defatted by a special patent pending production process. The obtained sunflower seed press cake is pulverized by a special product friendly method: oxygen-free and temperature-controlled.
Certified organic under the US-EU Organic Equivalency Arrangement by Prüfverein Verarbeitung e.V., Germany.

- Appearance: beige to brown powder
- Odor, taste: product typical
- Ingredient: 100 % Organic Sunflower Protein
- Botanical name: Helianthus Annuus Seed Extract

ANALYSIS DATA per 100 g

Calorific value:	approx. 350 kcal (1,466 kJ)
Protein content absolute:	min. 41 g
Total Carbohydrates:	max. 39 g
Carbohydrates:	max. 7 g
Dietary fibers:	max. 23 g
Sugar:	max. 9 g
Added sugar:	0 g
Fat:	max. 16 g
Monounsaturated fatty acids:	max. 6 g
Polyunsaturated fatty acids:	max. 8 g
Saturated fatty acids:	max. 2 g
Trans fatty acids:	max. 0.02 g
Salt:	max. 0.005 g
Sodium:	max. 0.002 g
Vitamin A:	0.00 mg
Vitamin D:	0.00 µg
Calcium:	min. 180 mg
Potassium:	min. 1,350 mg
Iron:	min. 4 mg
Folate:	min. 280 µg
Moisture:	max. 10 %
Sieve analysis:	min. 80 % <180 µm (80 mesh)

Above mentioned nutritional values are average values.

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Product Specification
ORGANIC SUNFLOWER PROTEIN

MICROBIOLOGY

Total plate count (TPC):	max. 10,000
Mold:	max. 1,000
Yeasts:	max. 1,000
Enterobacteriaceae:	max. 1,000
Coliforms:	max. 100
Salmonella (per 375g):	absent
E. coli (per 1g):	absent

HEAVY METALS

Arsenic:	max. 0.1 ppm
Cadmium:	max. 0.65 ppm
Lead:	max. 0.2 ppm
Mercury:	max. 0.1 ppm

APPLICATIONS

- Vegan/vegetarian foods and beverages
- Plant/vegetable based shakes, spreads, desserts
- Meat replacement in sausage and meat products
- Chocolates, bars and cereals
- Sauces, cremes, dressings
- Nutritional supplements

ALLERGENS

- This product is made from 100 % Organic Sunflower Seeds
- Gluten < 20 ppm

STORAGE AND MINIMUM SHELF-LIFE

Storage: Cool, dry, protected against direct light
Shelf life: When properly stored in original, closed packaging: 24 months from production date

PACKAGING

- 20 kg (44.09 lb) net weight cartons with inner PE bag

ORIGIN

- Product of Germany (European Union)

LABELING

- Organic Sunflower Protein

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Product Specification
ORGANIC SUNFLOWER PROTEIN

Depending on agricultural conditions and species the above values are subject to natural fluctuations.
This specification does not release the purchaser of our products from his duty of care and responsibility.

AOT Quality Assurance. Established by computer, therefore no signature.
Wiggensbach, 11.10.2018

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Certificate of Analysis

Product: Heliaflor® 45, organic, Sunflower protein

Lot-no.: 1674

Date of analysis: June 03, 2019

Production date: May 2019
Best before date: May 31, 2021

Test result:

Ingredients	Unit	Specification	Result	Method
Protein	g / 100g	min. 41 g	47.2	Acc. ASU Kjeldahl (N x 6,25)
Fat	g / 100g	max. 13 g	11.1	Acc. ASU, Weibull-Stoldt
Water	g / 100g	max. 10 %	8.1	calculated

Microbiological analyzes	Unit	Specification	Result	Method
Total viable count	cfu/g	max. 10.000	310	DIN EN ISO 4833-1 / PCA / 30°C/72h
Yeasts	cfu/g	max. 1.000	< 10	ISO 21527-2 / DG18 / 25°C/120h
Moulds	cfu/g	max. 1.000	10	ISO 21527-2 / DG18 / 25°C/120h
Enterobacteriaceae	cfu/g	max. 1.000	80	DIN ISO 21528-2 / VRBD / 37°C/22h
Coliforme	cfu/g	max. 100	80	ISO 4832 / VRBL / 37°C/22h
E. coli	-	negative in 1 g	absent	DIN EN ISO 16649-3 / MGM 37°C/22h / TBX 44°C/22h
Salmonellae	-	negative in 375g	absent	DIN 10135 - PCR

Heavy metals	Unit	Specification	Result	Method
Lead (Pb)	mg/kg	max. 0.1	< 0.015	DIN EN 15763 mod., ICP/MS
Cadmium (Cd)	mg/kg	max. 0.65	0.59	DIN EN 15763 mod., ICP/MS
Mercury (Hg)	mg/kg	max. 0.2	< 0,010	DIN EN 15763 mod., ICP/MS
Arsenic (As)	mg/kg	max. 0.1	< 0,04	DIN EN 15763 mod., ICP/MS

Allergens	Unit	Specification	Result	Method
Gluten	mg/kg	< 20	< 4.0	ELISA

Certificate of analysis does not release customers from their quality responsibility when processing our products

AOT Quality Assurance. Established by computer, therefore no signature.
Wiggensbach, 22.08.2019

All Organic Treasures GmbH
Am Mühlbach 38
D-87487 Wiggensbach

Certificate of Analysis

Product: Heliaflor® 45, organic, Sunflower protein

Lot-no.: 1907A1708

Date of analysis: July 30, 2019

Production date: July 2019
Best before date: July 31, 2021

Test result:

Ingredients	Unit	Specification	Result	Method
Protein	g / 100g	min. 41 g	47.3	Acc. ASU Kjeldahl (N x 6,25)
Fat	g / 100g	max. 13 g	11.1	Acc. ASU, Weibull-Stoldt
Water	g / 100g	max. 10 %	6.4	calculated

Microbiological analyzes	Unit	Specification	Result	Method
Total viable count	cfu/g	max. 10.000	270	DIN EN ISO 4833-1 / PCA / 30°C/72h
Yeasts	cfu/g	max. 1.000	< 10	ISO 21527-2 / DG18 / 25°C/120h
Moulds	cfu/g	max. 1.000	10	ISO 21527-2 / DG18 / 25°C/120h
Enterobacteriaceae	cfu/g	max. 1.000	< 10	DIN ISO 21528-2 / VRBD / 37°C/22h
Coliforme	cfu/g	max. 100	< 10	ISO 4832 / VRBL / 37°C/22h
E. coli	-	negative in 1 g	negative in 1 g	DIN EN ISO 16649-3 / MGM 37°C/22h / TBX 44°C/22h
Salmonellae	-	negative in 375g	negative in 375g	DIN 10135 - PCR

Heavy metals	Unit	Specification	Result	Method
Lead (Pb)	mg/kg	max. 0.1	< 0.015	DIN EN 15763 mod., ICP/MS
Cadmium (Cd)	mg/kg	max. 0.65	0.62	DIN EN 15763 mod., ICP/MS
Mercury (Hg)	mg/kg	max. 0.2	< 0,010	DIN EN 15763 mod., ICP/MS
Arsenic (As)	mg/kg	max. 0.1	< 0,04	DIN EN 15763 mod., ICP/MS

Allergens	Unit	Specification	Result	Method
Gluten	mg/kg	< 20	< 4.0	ELISA

Certificate of analysis does not release customers from their quality responsibility when processing our products

AOT Quality Assurance. Established by computer, therefore no signature.
Wiggensbach, 01.08.2019

All Organic Treasures GmbH
Heisinger Straße 45
D-87437 Kempten

Certificate of Analysis

Product: Heliaflor® 45, organic, Sunflower protein

Lot-no.: 18008249

Date of analysis: January 25, 2018

Production date: January 2018
Best before date: January 31, 2020

Test result:

Ingredients	Unit	Specification	Result	Method
Protein	g / 100g	min. 41 g	48,7	Acc. ASU Kjeldahl (N x 6,25)
Fat	g / 100g	max. 13 g	10,4	Acc. ASU, Weibull-Stoldt
Water	g / 100g	max. 10 %	7,1	calculated

Microbiological analyzes	Unit	Specification	Result	Method
Total viable count	cfu/g	max. 10.000	1.300	DIN EN ISO 4833-1 / PCA / 30°C/72h
Yeasts	cfu/g	max. 1.000	< 10	ISO 21527-2 / DG18 / 25°C/120h
Moulds	cfu/g	max. 1.000	10	ISO 21527-2 / DG18 / 25°C/120h
Enterobacteriaceae	cfu/g	max. 1.000	< 10	DIN ISO 21528-2 / VRBD / 37°C/22h
Coliforme	cfu/g	-	< 10	ISO 4832 / VRBL / 37°C/22h
E. coli	-	negative in 1 g	negative in 1 g	DIN EN ISO 16649-3 / MGM 37°C/22h / TBX 44°C/22h
Salmonellae	-	negative in 375g	negative in 375g	DIN 10135 - PCR

Heavy metals	Unit	Specification	Result	Method
Lead (Pb)	mg/kg	max. 0.1	0,02	DIN EN 15763 mod., ICP/MS
Cadmium (Cd)	mg/kg	max. 0.65	0,59	DIN EN 15763 mod., ICP/MS
Mercury (Hg)	mg/kg	max. 0.2	< 0,010	DIN EN 15763 mod., ICP/MS
Arsenic (As)	mg/kg	max. 0.1	< 0,04	DIN EN 15763 mod., ICP/MS

Allergens	Unit	Specification	Result	Method
Gluten	mg/kg	< 20	8,4	ELISA

Certificate of analysis does not release customers from their quality responsibility when processing our products

AOT Quality Assurance. Established by computer, therefore no signature.
Kempten, 26.01.2018

ALL ORGANIC TREASURES GmbH – Pflanzliche Bio Öle & Bio Proteine
Heisinger Str.45 - D-87437 Kempten Tel: 0049-(0)831-960986-0 Fax: 0049-(0)831-960986-99
E-Mail: info@aot.de Website: www.aot.de
Registergericht Kempten HRB 8191 USt-Id Nr.: DE 813 705 446

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 4376888
Order No. 5019682
Customer No. 10003684

Daniela Müller
Phone +49 30 34607-716
Fax +49 30 34607-710
daniela.mueller@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle D-PL-14115-02-00 D-PL-14115-03-00 D-PL-14115-04-00 D-PL-14115-07-00

Berlin, 11.07.2019

Your order/project: .
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.A.

Daniela Müller
staatl.geprüfte Lebensmittelchemikerin

Customer Service Consultant

Approved by: 11.07.2019 i.A. Daniela Müller Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	190724223
Sample:	Heliaflor® 55, bio
BBD/Lot/Batch:	1827, M19-357, Palette 1-24
Date of receipt:	02.07.2019
Testing period (begin / end):	02.07.2019 / 10.07.2019
Quantity:	2001g
Additional Information 1:	Rohware: 1605-27 SoK
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Constituents:						
Protein	ASU L 06.00-7 mod. 2014-08 Mod.: automatical titration (N x 6,25)	HH	g/100 g	52,1	0,1	
Fat	ASU L 06.00-6 2014-08	HH	g/100 g	2,4	0,3	
Dry matter	ASU L 17.00-1	HH	g/100 g	93,16	0,01	
Water	calculated	HH	g/100 g	6,84	0,01	

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Allergens:						
Mustard	PCR(1)			not detectable		

(1) subcontracted.

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Allergens:						
Prolamines from wheat, rye, barley, oat and spelt calc. as gluten (antibody G12)	SOP M 0460, ELISA (gluten)	TS	mg/kg	< 4,0	4,0	
Soy protein	SOP M 0460, ELISA (soy protein)	TS	mg/kg	< 2,50	2,50	
Almond	PCR(1)			not detectable		

(1) subcontracted.

Minerals/metals:						
Lead	DIN EN 15763, mod.	HH	mg/kg	< 0,015	0,015	
Cadmium	DIN EN 15763, mod.	HH	mg/kg	0,50	0,01	
Mercury	DIN EN 15763, mod.	HH	mg/kg	< 0,010	0,010	
Arsenic	DIN EN 15763, mod.	HH	mg/kg	< 0,04	0,04	

Summary of used test methods:

ASU L 06.00-6	2014-08
ASU L 06.00-7 mod.	2014-08 Mod.: automatical titration (N x 6,25)
ASU L 17.00-1	1982-05, correction 2002-12
DIN EN 15763, mod.	2010-04, Modification: additional Elements for IntStd (In, Sc). Additional elements are measured.
PCR	Limit of detection: 3 pg mustard DNA per reaction; < 1 mg/kg rel. to reference substance, 45 cycles
PCR	Limit of detection: 17 pg Almond DNA per reaction, < 5 mg/kg rel. to reference material, 45 cycles
SOP M 0460, ELISA (gluten)	2017-06
SOP M 0460, ELISA (soy protein)	2017-06 Cross-reactivities: Adzuki beans, mung beans, scarlet runner beans > 20 mg/kg. Furthermore small cross reactivities (< 20 mg/kg) exist to bush beans, kidney beans, broad beans, lima beans, pinto beans, white beans, green peas and peanut (roasted).
calculated	Water as difference to dry matter

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

*** End of test report ***

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Trading GmbH
Heisingerstr. 45
87437 Kempten

Test Report 2981565
Order No. 3782874
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

Berlin, 21.06.2016

Your order/project: .
Your purchase order number: Analytic
Your purchase order date: 06.06.2016

SGS INSTITUT FRESENIUS

i.V.

Sylvia Klaproth
Dipl.Ing.
Lebensmitteltechnologie

Analytic Consultant Food

i.A.

Maria Oelze
staatl. geprüfte
Lebensmittelchemikerin

Analytic Consultant Food

General Information:

Sample No.:	160587910
Sample:	Projekt "Phytamin AB 63" Heliaflor 55, kbA
BBD/Lot/Batch:	16158219 / VÖ16-00176/14SoK
Date of receipt:	13.06.2016
Testing period (begin / end):	13.06.2016 / 21.06.2016
Quantity:	ca. 1000 g
Cultivation type:	kbA
Country of origin:	RO

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Constituents:						
Protein	acc. to ASU, Kjeldahl (N x 6,25)	HH	g/100 g	53,7	0,1	
Fat	acc. to ASU, Weibull-Stoldt	HH	g/100 g	2,0	0,3	
Dry matter	acc. to ASU, drying at 103°C	HH	g/100 g	92,01	0,01	
Water	calculated	HH	g/100 g	7,99	0,01	
Ash	acc. to ASU, 550°C	HH	g/100 g	7,96	0,01	
Dietary fibre	SOP M 1010 nach ASU L 00.00-18, mod., enzymatical-gravimetrical	HH	g/100 g	19,9	0,02	
Carbohydrates	calculated(1)	HH	g/100 g	8,5	0,1	
Energy value	calculated	HH	kcal/100g	306	1	
Energy value	calculated	HH	kJ/100g	1290	1	

(1) as difference of the determined parameters or as sum of the directly determined carbohydrates

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Allergens:						
Celery	BVL L 08.00-56, PCR(1)(2)			not detectable		

(1) Limit of detection: 10 pg Celery-DNA per reaction, < 5 mg/kg rel. to reference material, 45 cycles
(2) subcontracted.

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Allergens:						
Prolamines from wheat, rye, barley, oat and spelt (calculated as gluten)	ELISA	TS	mg/kg	6,8	4,0	

Sample 160587910	Projekt "Phytamin AB 63"; Heliaflor 55, kbA					
Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Minerals/metals:						
Lead	DIN EN 15763 mod., ICP/MS	HH	mg/kg	< 0,02	0,02	
Cadmium	DIN EN 15763 mod., ICP/MS	HH	mg/kg	0,62	0,01	
Mercury	DIN EN 15763 mod., ICP/MS	HH	mg/kg	< 0,010	0,010	
Arsenic	DIN EN 15763 mod., ICP/MS	HH	mg/kg	< 0,04	0,04	

Further parameters:

Parameter	Method	Result
Mustard allergen	PCR*	not detectable
(limit of detection 15 pg mustard DNA per reaction, 45 cycles)		
Almond allergen	PCR*	not detectable
(limit of detection 17 pg almond DNA per reaction, 45 cycles)		

*subcontracted

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 INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Trading GmbH
Heisingerstr. 45
87437 Kempten

Test Report 2981565
Order No. 3782874
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

Berlin, 21.06.2016

Your order/project: .
Your purchase order number: Analytic
Your purchase order date: 06.06.2016

SGS INSTITUT FRESENIUS

i.V.

Sylvia Klaproth
Dipl.Ing.
Lebensmitteltechnologie

Analytic Consultant Food

i.A.

Maria Oelze
staatl. geprüfte
Lebensmittelchemikerin

Analytic Consultant Food

SGS INSTITUT FRESENIUS GmbH | Im Maisel 14 D-65232 Taunusstein **t** +49 6128 744-0 **f** +49 6128 744 - 9890 www.institut-fresenius.sgsgroup.de
Geschäftsführer: Stefan Steinhardt, Aufsichtsratsvorsitzender: Dirk Hellemans, Sitz der Gesellschaft: Taunusstein,
HRB 21543 Amtsgericht Wiesbaden

General Information:

Sample No.:	160587910
Sample:	Projekt "Phytamin AB 63" Heliaflor 55, kbA
BBD/Lot/Batch:	16158219 / VÖ16-00176/14SoK
Date of receipt:	13.06.2016
Testing period (begin / end):	13.06.2016 / 21.06.2016
Quantity:	ca. 1000 g
Cultivation type:	kbA
Country of origin:	RO

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Constituents:						
Protein	acc. to ASU, Kjeldahl (N x 6,25)	HH	g/100 g	53,7	0,1	
Fat	acc. to ASU, Weibull-Stoldt	HH	g/100 g	2,0	0,3	
Dry matter	acc. to ASU, drying at 103°C	HH	g/100 g	92,01	0,01	
Water	calculated	HH	g/100 g	7,99	0,01	
Ash	acc. to ASU, 550°C	HH	g/100 g	7,96	0,01	
Dietary fibre	SOP M 1010 nach ASU L 00.00-18, mod., enzymatical-gravimetrical	HH	g/100 g	19,9	0,02	
Carbohydrates	calculated(1)	HH	g/100 g	8,5	0,1	
Energy value	calculated	HH	kcal/100g	306	1	
Energy value	calculated	HH	kJ/100g	1290	1	

(1) as difference of the determined parameters or as sum of the directly determined carbohydrates

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Allergens:						
Celery	BVL L 08.00-56, PCR(1)(2)			not detectable		

(1) Limit of detection: 10 pg Celery-DNA per reaction, < 5 mg/kg rel. to reference material, 45 cycles

(2) subcontracted.

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Allergens:						
Prolamines from wheat, rye, barley, oat and spelt (calculated as gluten)	ELISA	TS	mg/kg	6,8	4,0	

Sample 160587910	Projekt "Phytamin AB 63"; Heliaflor 55, kbA					
Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Minerals/metals:						
Lead	DIN EN 15763 mod., ICP/MS	HH	mg/kg	< 0,02	0,02	
Cadmium	DIN EN 15763 mod., ICP/MS	HH	mg/kg	0,62	0,01	
Mercury	DIN EN 15763 mod., ICP/MS	HH	mg/kg	< 0,010	0,010	
Arsenic	DIN EN 15763 mod., ICP/MS	HH	mg/kg	< 0,04	0,04	

Further parameters:

Parameter	Method	Result
Mustard allergen	PCR*	not detectable
(limit of detection 15 pg mustard DNA per reaction, 45 cycles)		
Almond allergen	PCR*	not detectable
(limit of detection 17 pg almond DNA per reaction, 45 cycles)		

*subcontracted

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 INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 3861034
Order No. 4581745
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710
sylvia.klaproth@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Berlin, 18.06.2018

Your order/project: Phytamin Projekt
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.A.

Eileen Weyer
Dipl.Ing.Lebensmitteltechnologie

Customer Service Consultant

Approved by: 18.06.2018 i.A. Dipl.-Ing. Eileen Weyer Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	180557829
Sample:	Projekt "Phytamin AB 63 - Interreg. Österreich-Bayern 2014-2020" Heliaflor® 55, kbA Rohware: 486-19SoK/ 989-20 SoK
BBD/Lot/Batch:	18152219
Date of receipt:	08.06.2018
Testing period (begin / end):	11.06.2018 / 16.06.2018
Quantity:	1251g
Sampling	Einsendung Kräutermühle

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Microbiological analysis:						
Total Viable Count	DIN EN ISO 4833-1 / PCA / 30°C/72h	HH	cfu/g	320	10	
Yeasts (incl. osmophilic yeasts)	ISO 21527-2 / DG18 / 25°C/120h	HH	cfu/g	< 10	10	
Moulds (incl. xerophilic moulds)	ISO 21527-2 / DG18 / 25°C/120h	HH	cfu/g	20	10	
Enterobacteriaceae	DIN EN ISO 21528-2 /VRBD/37°C/24h(1)<	HH	cfu/g	< 10	10	
Coliform bacteria	ISO 4832 / VRBL / 37°C/22h	HH	cfu/g	< 10	10	
E. coli	DIN EN ISO 16649-3 / MGM 37°C/22h / TBX 44°C/20h	HH	in 1 g	negative		
Coagulase-positive-staphylococci	DIN EN ISO 6888-2 / RPF / 37°C/45h	HH	cfu/g	< 10	10	
Presumptive Bacillus cereus	DIN EN ISO 7932 / MYP /30°C/48h	HH	cfu/g	< 10	10	
Salmonella spp.	DIN 10135 - PCR(2)	HH	in 375g	negative		

(1) Presumptive Enterobacteriaceae. Evaluation according to DIN EN ISO 21528-2:2017-09 Section 9.4. without further subculture and biochemical confirmation of typical colonies.

(2) The DNA extraction, amplification and real-time detection were carried out with the test kits "foodproof ® StarPrep One Kit" and "foodproof ® Salmonella detection kit, 5 'nuclease" the Biotecon Diagnostics GmbH (14473 Potsdam - Germany) in accordance with the manufacturer's specifications - NordVal-number: 023

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.

*** End of test report ***

SGS INSTITUT FRESENIUS GmbH | Im Maisel 14 D-65232 Taunusstein t +49 6128 744-0 f +49 6128 744-130 www.institut-fresenius.sgsgroup.de

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 3861043
Order No. 4581745
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710
sylvia.klaproth@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Berlin, 18.06.2018

Your order/project: Phytamin Projekt
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.A.

Eileen Weyer
Dipl.Ing.Lebensmitteltechnologie

Customer Service Consultant

Approved by: 18.06.2018 i.A. Dipl.-Ing. Eileen Weyer Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	180557829
Sample:	Projekt "Phytamin AB 63 - Interreg. Österreich-Bayern 2014-2020" Heliaflor® 55, kbA Rohware: 486-19SoK/ 989-20 SoK
BBD/Lot/Batch:	18152219
Date of receipt:	08.06.2018
Testing period (begin / end):	08.06.2018 / 15.06.2018
Quantity:	1251g
Sampling	Einsendung Kräutermühle

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Constituents:						
Protein	ASU L 06.00-7 mod., N x 6,25	HH	g/100 g	51,9	0,1	
Fat	acc. to ASU, Weibull-Stoldt	HH	g/100 g	2,2	0,3	
Dry matter	acc. to ASU, drying at 103°C	HH	g/100 g	91,44	0,01	
Water	calculated	HH	g/100 g	8,56	0,01	

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Allergens:						
Celery	Real-time PCR(1)(2)			not detectable		
Mustard	Real-time PCR(3)(2)			not detectable		

(1) Limit of Detection: 0,4 mg/kg in non-processed corn meal. A sample specific Limit od Detection was not determined.
(2) subcontracted.
(3) Limit of Detection: 0,4 mg/kg in non-processed corn meal. A sample specific Limit of Detection was not determined.

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Allergens:						
Prolamines from wheat, rye, barley, oat and spelt (calculated as gluten)	ELISA	TS	mg/kg	< 4,0	4,0	
Almond	Real-time PCR(1)(2)			not detectable		

(1) Limit of Detection: 0,4 mg/kg in non-processed corn meal. A sample specific Limit od Detection was not determined.
(2) subcontracted.

Minerals/metals:						
Lead	DIN EN 15763, mod.	HH	mg/kg	< 0,02	0,02	
Cadmium	DIN EN 15763, mod.	HH	mg/kg	0,45	0,01	
Mercury	DIN EN 15763, mod.	HH	mg/kg	< 0,010	0,010	
Arsenic	DIN EN 15763, mod.	HH	mg/kg	< 0,04	0,04	

SGS INSTITUT FRESENIUS GmbH | Im Maisel 14 D-65232 Taunusstein t +49 6128 744-0 f +49 6128 744-130 www.institut-fresenius.sgsgroup.de

Sample 180557829	Projekt "Phytamin AB 63 - Interreg. Österreich-Bayern 2014-2020"; Heliaflor® 55, kbA; Rohware:					
Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements

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.

*** End of test report ***

SGS INSTITUT FRESENIUS GmbH | Im Maisel 14 D-65232 Taunusstein **t** +49 6128 744-0 **f** +49 6128 744-130 www.institut-fresenius.sgsgroup.de

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Heisingerstr. 45
87437 Kempten

Test Report 3583578
Order No. 4339146
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710
sylvia.klaproth@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Berlin, 06.11.2017

Your order/project: .
Your purchase order number: Analytic
Your purchase order date: 25.10.2017

SGS INSTITUT FRESENIUS

i.A.

Daniela Körber
staatl.geprüfte Lebensmittelchemikerin

Customer Service Consultant

SGS

INSTITUT FRESENIUS

General Information:

Sample No.:	171154748
Sample:	Projekt "Phytamin AB 63 - Interreg Österreich-Bayern 2014-2020" Heliaflor Crisps Instant, kbA
BBD/Lot/Batch:	1707A0321
Date of receipt:	27.10.2017
Testing period (begin / end):	30.10.2017 / 04.11.2017
Quantity:	235g
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Microbiological analysis:						
Total Viable Count	DIN EN ISO 4833-1 / PCA / 30°C/72h	HH	cfu/g	230	10	
Yeasts (incl. osmophilic yeasts)	ISO 21527-2 / DG18 / 25°C/120h	HH	cfu/g	< 10	10	
Moulds (incl. xerophilic moulds)	ISO 21527-2 / DG18 / 25°C/120h	HH	cfu/g	50	10	
Enterobacteriaceae	DIN ISO 21528-2 / VRBD / 37°C/22h(1)<	HH	cfu/g	60	10	
E. coli	DIN EN ISO 16649-3 / MGM 37°C/22h / TBX 44°C/20h	HH	in 1 g	negative		
Coagulase-positive-staphylococci	DIN EN ISO 6888-2 / RPF / 37°C/45h	HH	cfu/g	< 10	10	
Presumptive Bacillus cereus	DIN EN ISO 7932 / MYP /30°C/48h	HH	cfu/g	10	10	
Salmonella spp.	DIN 10135 - PCR(2)	HH	in 25 g	negative		

(1) Presumptive Enterobacteriaceae. Evaluation according to DIN ISO 21528-2: 2009 Section 9.4. without further subculture and biochemical confirmation of typical colonies.

(2) The DNA extraction, amplification and real-time detection were carried out with the test kits "foodproof ® StarPrep One Kit" and "foodproof ® Salmonella detection kit, 5 'nuclease" the Biotecon Diagnostics GmbH (14473 Potsdam - Germany) in accordance with the manufacturer's specifications - NordVal-number: 023

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.

*** End of test report ***

SGS

INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 4335176
Order No. 4988128
Customer No. 10003684

Daniela Müller
Phone +49 30 34607-716
Fax +49 30 34607-710
daniela.mueller@sgs.com

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

Berlin, 11.06.2019

Your order/project: .
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.A.

Daniela Müller
staatl.geprüfte Lebensmittelchemikerin

Customer Service Consultant

Approved by: 11.06.2019 i.A. Daniela Müller Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	190621589
Sample:	Heliaflor Instant, bio
BBD/Lot/Batch:	1904A1501
Date of receipt:	05.06.2019
Testing period (begin / end):	06.06.2019 / 11.06.2019
Quantity:	264g
Additional Information 1:	Rohware: 1695
Additional Information 2:	Mischmuster Extrusion
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Microbiological analysis:						
Total Viable Count	DIN EN ISO 4833-1	HH	cfu/g	190	10	
Yeasts (incl. osmophilic yeasts)	ISO 21527-2	HH	cfu/g	< 10	10	
Moulds (incl. xerophilic moulds)	ISO 21527-2	HH	cfu/g	20	10	
Enterobacteriaceae	DIN EN ISO 21528-2	HH	cfu/g	20	10	
Coliform bacteria	ISO 4832	HH	cfu/g	< 10	10	
E. coli	DIN EN ISO 16649-3	HH	in 1 g	negative		
Coagulase-positive-staphylococci	DIN EN ISO 6888-2	HH	cfu/g	< 10	10	
Presumptive Bacillus cereus	DIN EN ISO 7932	HH	cfu/g	< 10	10	
Salmonella spp.	DIN 10135 - PCR	HH	in 125g	negative		
Listeria monocytogenes	DIN EN ISO 11290-1 mod.	HH	in 25 g	negative		

Summary of used test methods:

DIN 10135 - PCR	2013-05 The DNA extraction, amplification and real-time detection were carried out with the test kits "foodproof® StarPrep One Kit" and "foodproof® Salmonella detection kit, 5`Nuclease" the Biotecon Diagnostics GmbH (14473 Potsdam - Germany) in accordance with the manufacturer's specifications - NordVal-number: 023
DIN EN ISO 11290-1 mod.	2017-09 HF 30 °C 24 h / Listeria-Agar according Ottaviani & Agosti + RAPID'L.Mono(TM) 37 °C 24 h Modification according AFNOR BRD 07/16-01/09 / AFNOR BRD 07/04-09/98 / NordVal 022
DIN EN ISO 16649-3	2018-01 MGM 37 °C 24 h / TBX 44 °C 21 h
DIN EN ISO 21528-2	2017-09 VRBD 37 °C 24 h Presumptive Enterobacteriaceae. Evaluation according to DIN EN ISO 21528-2:2017-09 Section 9.4. without further subculture and biochemical confirmation of typical colonies.
DIN EN ISO 4833-1	2013-12 PCA 30 °C 72 h
DIN EN ISO 6888-2	2003-12

Approved by: 11.06.2019 i.A. Daniela Müller Customer Service Consultant.

	RPF 37 °C 45 h
DIN EN ISO 7932	2005-03 MYP 30 °C 48 h
ISO 21527-2	2008-07 DG18 25 °C 120 h
ISO 4832	2006-02 VRBL 37 °C 22 h

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.

*** End of test report ***

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 4343849
Order No. 4988128
Customer No. 10003684

Daniela Müller
Phone +49 30 34607-716
Fax +49 30 34607-710
daniela.mueller@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle D-PL-14115-02-00 D-PL-14115-03-00 D-PL-14115-04-00 D-PL-14115-07-00

Berlin, 18.06.2019

Your order/project: .
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.A.

Daniela Müller
staatl.geprüfte Lebensmittelchemikerin

Customer Service Consultant

Approved by: 18.06.2019 i.A. Daniela Müller Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	190621589
Sample:	Heliaflor Instant, bio
BBD/Lot/Batch:	1904A1501
Date of receipt:	05.06.2019
Testing period (begin / end):	05.06.2019 / 18.06.2019
Quantity:	264g
Additional Information 1:	Rohware: 1695
Additional Information 2:	Mischmuster Extrusion
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Constituents:						
Protein	ASU L 06.00-7 mod. 2014-08 Mod.: automatical titration (N x 6,25)	HH	g/100 g	52,6	0,1	
Fat	ASU L 06.00-6 2014-08	HH	g/100 g	3,0	0,3	
Dry matter	ASU L 17.00-1	HH	g/100 g	95,23	0,01	
Water	calculated	HH	g/100 g	4,77	0,01	
Ash	ASU L 06.00-4	HH	g/100 g	8,70	0,01	
Dietary fibre	ASU L 00.00-18, mod.	HH	g/100 g	24,2	0,50	
Carbohydrates	calculated		g/100 g	6,7	0,1	
Energy value	calculated		kcal/100g	313	1	
Energy value	calculated		kJ/100g	1313	1	
Allergens:						
Prolamines from wheat, rye, barley, oat and spelt calc. as gluten (antibody G12)	SOP M 0460, ELISA (gluten)	TS	mg/kg	8,3	4,0	
Milk protein (screening test)	SOP M 0460, ELISA (milk protein)	TS	mg/kg	< 0,40	0,40	
Soy protein	SOP M 0460, ELISA (soy protein)	TS	mg/kg	< 2,50	2,50	
Minerals/metals:						
Lead	DIN EN 15763, mod	HH	mg/kg	< 0,015	0,015	
Cadmium	DIN EN 15763, mod	HH	mg/kg	0,61	0,01	
Mercury	DIN EN 15763, mod	HH	mg/kg	< 0,010	0,010	
Arsenic	DIN EN 15763, mod	HH	mg/kg	< 0,04	0,04	

Approved by: 18.06.2019 i.A. Daniela Müller Customer Service Consultant.

Summary of used test methods:

ASU L 00.00-18, mod.	1997-01, correction 2017-10. Mod.: Determination of protein with Dumas This method corresponds to AOAC 985.29
ASU L 06.00-4	2017-10
ASU L 06.00-6	2014-08
ASU L 06.00-7 mod.	2014-08 Mod.: automatical titration (N x 6,25)
ASU L 17.00-1	1982-05, correction 2002-12
DIN EN 15763, mod	2010-04, Modification: additional Elements for IntStd (In, Sc) - additional elements are measured
SOP M 0460, ELISA (gluten)	2017-06
SOP M 0460, ELISA (milk protein)	2017-06 Cross-reactivities: sheep's milk 0,94 %, goat milk 0,01 %
SOP M 0460, ELISA (soy protein)	2017-06 Cross-reactivities: Adzuki beans, mung beans, scarlet runner beans > 20 mg/kg. Furthermore small cross reactivities (< 20 mg/kg) exist to bush beans, kidney beans, broad beans, lima beans, pinto beans, white beans, green peas and peanut (roasted).
calculated	Water as difference to dry matter
calculated	Carbohydrates as difference of the determined parameters or as sum of the directly determined carbohydrates
calculated	Energy value according to Regulation (EU) 1169/2011, Annex XIV

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

*** End of test report ***

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 3821499
Order No. 4550489
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710
sylvia.klaproth@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle D-PL-14115-02-00 D-PL-14115-03-00 D-PL-14115-04-00 D-PL-14115-07-00

Berlin, 16.05.2018

Your order/project: .
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.A.

Maria Oelze
staatl. geprüfte Lebensmittelchemikerin

Customer Service Consultant

Approved by: 16.05.2018 i.A. Maria Oelze Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	180445650
Sample:	Projekt "Phytamin AB 63 - Interreg Österreich-Bayern 2014-2020" Heliaflor® Instant, kbA, MM Vorab LF
BBD/Lot/Batch:	8003135918
Date of receipt:	07.05.2018
Testing period (begin / end):	08.05.2018 / 16.05.2018
Quantity:	269g, 262g
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Constituents:						
Protein	ASU L 06.00-7 mod., N x 6,25	HH	g/100 g	52,9	0,1	
Fat	acc. to ASU, Weibull-Stoldt	HH	g/100 g	2,3	0,3	
Dry matter	acc. to ASU, drying at 103°C	HH	g/100 g	94,66	0,01	
Water	calculated	HH	g/100 g	5,34	0,01	
Allergens:						
Prolamines from wheat, rye, barley, oat and spelt (calculated as gluten)	ELISA	TS	mg/kg	5,6	4,0	

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.

*** End of test report ***

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 3819298
Order No. 4550489
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710
sylvia.klaproth@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle D-PL-14115-02-00 D-PL-14115-03-00 D-PL-14115-04-00 D-PL-14115-07-00

Berlin, 15.05.2018

Your order/project: .
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.V.
Sylvia Klaproth
Dipl.Ing.
Lebensmitteltechnologie

Customer Service Manager Food

Approved by: 15.05.2018 i.V. Dipl.-Ing. Sylvia Klaproth Customer Service Manager Food.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	180445650
Sample:	Projekt "Phytamin AB 63 - Interreg Österreich-Bayern 2014-2020" Heliaflor® Instant, kbA, MM Vorab LF
BBD/Lot/Batch:	8003135918
Date of receipt:	07.05.2018
Testing period (begin / end):	09.05.2018 / 14.05.2018
Quantity:	269g, 262g
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Microbiological analysis:						
Total Viable Count	DIN EN ISO 4833-1 / PCA / 30°C/72h	HH	cfu/g	30	10	
Yeasts (incl. osmophilic yeasts)	ISO 21527-2 / DG18 / 25°C/120h	HH	cfu/g	< 10	10	
Moulds (incl. xerophilic moulds)	ISO 21527-2 / DG18 / 25°C/120h	HH	cfu/g	< 10	10	
Enterobacteriaceae	DIN EN ISO 21528-2 /VRBD/37°C/24h(1)<	HH	cfu/g	< 10	10	
E. coli	DIN EN ISO 16649-3 / MGM 37°C/22h / TBX 44°C/20h	HH	in 1 g	negative		
Presumptive Bacillus cereus	DIN EN ISO 7932 / MYP /30°C/48h	HH	cfu/g	< 10	10	
Salmonella spp.	DIN 10135 - PCR(2)	HH	in 375g	negative		

(1) Presumptive Enterobacteriaceae. Evaluation according to DIN EN ISO 21528-2:2017-09 Section 9.4. without further subculture and biochemical confirmation of typical colonies.

(2) The DNA extraction, amplification and real-time detection were carried out with the test kits "foodproof ® StarPrep One Kit" and "foodproof ® Salmonella detection kit, 5 'nuclease" the Biotecon Diagnostics GmbH (14473 Potsdam - Germany) in accordance with the manufacturer's specifications - NordVal-number: 023

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.

*** End of test report ***

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 3851744
Order No. 4577513
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710
sylvia.klaproth@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle D-PL-14115-02-00 D-PL-14115-03-00 D-PL-14115-04-00 D-PL-14115-07-00

Berlin, 11.06.2018

Your order/project: Phytamin Projekt
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.V.

Susanne Funk
staatl. geprüfte Lebensmittelchemikerin

Customer Service Consultant

Approved by: 11.06.2018 i. V. Susanne Funk Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	180539742
Sample:	Projekt "Phytamin AB 63 - Interreg Österreich-Bayern 2014-2020" Heliaflor® Instant, kbA
BBD/Lot/Batch:	1804A0739, Rohware: 8003135918
Date of receipt:	05.06.2018
Testing period (begin / end):	05.06.2018 / 08.06.2018
Quantity:	2 x ca. 381g
Cultivation type:	kbA
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Minerals/metals:						
Lead	DIN EN 15763, mod.	HH	mg/kg	< 0,02	0,02	
Cadmium	DIN EN 15763, mod.	HH	mg/kg	0,49	0,01	
Mercury	DIN EN 15763, mod.	HH	mg/kg	< 0,010	0,010	
Arsenic	DIN EN 15763, mod.	HH	mg/kg	< 0,04	0,04	

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.

*** End of test report ***

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS Berlin Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 4499591
Order No. 5120604
Customer No. 10003684

Maria Oelze
Phone +49 3034607-786
Fax +49 3034607-710
maria.oelze@sgs.com

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Agriculture, Food

SGS INSTITUT FRESENIUS Berlin
GmbH & Co. KG
Tegeler Weg 33
10589 Berlin

Berlin, 08.10.2019

Your order/project: .
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS Berlin

i.A.

Eileen Weyer
Dipl.Ing.Lebensmitteltechnologie

Customer Service Consultant

Approved by: 08.10.2019 i.A. Dipl.-Ing. Eileen Weyer Customer Service Consultant.

SGS INSTITUT FRESENIUS

General Information:

Sample No.:	191075725
Sample:	Heliaflor Sonnenblumen Hack, Bio Rohware: 1697/28SoK
BBD/Lot/Batch:	1908A1846
Date of receipt:	01.10.2019
Testing period (begin / end):	01.10.2019 / 08.10.2019
Quantity:	ca. 200 g
Cultivation type:	Organic
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of quantification	Requirements
Constituents:						
Protein	ASU L 06.00-7 mod. 2014-08 Mod.: automatical titration (N x 6,25)	HH	g/100 g	52,0	0,1	
Fat	ASU L 06.00-6 2014-08	HH	g/100 g	2,7	0,3	
Allergens:						
Prolamines from wheat, rye, barley, oat and spelt calc. as gluten (antibody G12)	SOP M 0460, ELISA (gluten)	TS	mg/kg	18,8	4,0	
Milk protein (screening test)	SOP M 0460, ELISA (milk protein)	TS	mg/kg	< 0,40	0,40	
Soy protein	SOP M 0460, ELISA (soy protein)	TS	mg/kg	< 2,50	2,50	
Minerals/metals:						
Lead	DIN EN 15763, mod.	HH	mg/kg	< 0,015	0,015	
Cadmium	DIN EN 15763, mod.	HH	mg/kg	0,54	0,01	
Mercury	DIN EN 15763, mod.	HH	mg/kg	< 0,010	0,010	
Arsenic	DIN EN 15763, mod.	HH	mg/kg	< 0,04	0,04	

Summary of used test methods:

ASU L 06.00-6	2014-08
ASU L 06.00-7 mod.	2014-08 Mod.: automatical titration

Approved by: 08.10.2019 i.A. Dipl.-Ing. Eileen Weyer Customer Service Consultant.

	(N x 6,25)
DIN EN 15763, mod.	2010-04, Modification: additional Elements for IntStd (In, Sc). Additional elements are measured.
SOP M 0460, ELISA (gluten)	2017-06
SOP M 0460, ELISA (milk protein)	2017-06 Cross-reactivities: sheep's milk 0,94 %, goat milk 0,01 %
SOP M 0460, ELISA (soy protein)	2017-06 Cross-reactivities: Adzuki beans, mung beans, scarlet runner beans > 20 mg/kg. Furthermore small cross reactivities (< 20 mg/kg) exist to bush beans, kidney beans, broad beans, lima beans, pinto beans, white beans, green peas and peanut (roasted).

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

*** End of test report ***

SGS INSTITUT FRESENIUS

SGS INSTITUT FRESENIUS GmbH Tegeler Weg 33 10589 Berlin

All Organic Treasures GmbH
Am Mühlbach 38
87487 Wiggensbach

Test Report 4201235
Order No. 4876024
Customer No. 10003684

Dipl.-Ing. Sylvia Klaproth
Phone +49 30/34607-701
Fax +49 30/34607-710
sylvia.klaproth@sgs.com

Agriculture, Food

SGS INSTITUT FRESENIUS GmbH
Tegeler Weg 33
10589 Berlin

DAkkS Deutsche Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-04-00
D-PL-14115-07-00

Berlin, 05.03.2019

Your order/project: .
Your purchase order number: Analytic

SGS INSTITUT FRESENIUS GmbH

i.A.

Daniela Müller
staatl.geprüfte Lebensmittelchemikerin

Customer Service Consultant

Approved by: 05.03.2019 i.A. Daniela Müller Customer Service Consultant.

General Information:

Sample No.:	190224030
Sample:	Heliaflor® 55, bio
BBD/Lot/Batch:	17132219
Date of receipt:	28.02.2019
Testing period (begin / end):	28.02.2019 / 05.03.2019
Quantity:	99g
Sampling	sent by customer

Test Results:

Parameter	Method	Lab	Unit	Result	Limit of detection	Requirements
Microbiological analysis:						
Total Viable Count	DIN EN ISO 4833-1	HH	cfu/g	240	10	
Yeasts (incl. osmophilic yeasts)	ISO 21527-2	HH	cfu/g	< 10	10	
Moulds (incl. xerophilic moulds)	ISO 21527-2	HH	cfu/g	< 10	10	
Enterobacteriaceae	DIN EN ISO 21528-2	HH	cfu/g	< 10	10	
Coliform bacteria	ISO 4832	HH	cfu/g	< 10	10	
E. coli	DIN EN ISO 16649-3	HH	in 1 g	negative		
Coagulase-positive-staphylococci	DIN EN ISO 6888-2	HH	cfu/g	< 10	10	
Presumptive Bacillus cereus	DIN EN ISO 7932	HH	cfu/g	10	10	
Salmonella spp.	DIN 10135 - PCR	HH	in 25 g	negative		

Summary of used test methods:

DIN 10135 - PCR	2013-05 The DNA extraction, amplification and real-time detection were carried out with the test kits "foodproof® StarPrep One Kit" and "foodproof® Salmonella detection kit, 5`Nuclease" the Biotecon Diagnostics GmbH (14473 Potsdam - Germany) in accordance with the manufacturer's specifications - NordVal-number: 023
DIN EN ISO 16649-3	2018-01 MGM 37 °C 22 h / TBX 44 °C 20 h
DIN EN ISO 21528-2	2017-09 VRBD 37 °C 24 h Presumptiv Enterobacteriaceae. Evaluation according to DIN EN ISO 21528-2:2017-09 Section 9.4. without further subculture and biochemical confirmation of typical colonies.
DIN EN ISO 4833-1	2013-12 PCA 30 °C 72 h
DIN EN ISO 6888-2	2003-12 RPF 37 °C 45 h
DIN EN ISO 7932	2005-03 MYP 30 °C 48 h
ISO 21527-2	2008-07 DG18 25 °C 120 h
ISO 4832	2006-02 VRBL 37 °C 22 h

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.

*** End of test report ***

SYNLAB Analytics & Services Germany GmbH
Standort Jena
Orlaweg 2
07743 Jena
Deutschland

SYNLAB Analytks & Services Germany GmbH Orlaweg 2 07743 Jena
Kramerbrau Saaten und Ole GmbH
Ludwig-Hir schberger-Allee 11
85276 Pfaffenhofen a. d. Ilm
Deutschland

1hr Ansprechpartner:
Dr. Carsten Loser
wiss. Mitarbeiter
Arbeitsgruppe ROckstande und Kontaminanten

Telefon 03641/ 30 96 - 350
carsten.loeser@synlab.com
www.synlab.de

Analysis Report referencing Order # F 09435-18

Customer:	Kramerbrau Saaten und Ole GmbH Ludwig-Hirschberger-Allee 11, 85276 Pfaffenhofen a. d. Ilm
Sample size:	1 Sample
Sample type:	Food Ingredient (lx)
Sample taken by	Customer
Sample receipt:	14.05.2018
Analysis period:	14.05.2018 to 17.05.2018

Ladies and Gentlemen,

Herewith we are sending you the analysis results regarding the above referenced order.

With kind regards,
SYNLAB Analytics & Services Germany GmbH

SYNLAG

Analysis report for Order #F 09435 - 18L1

Document-Nr.F2018 -009435 LI- 0

Customer:	Kramerbrau Saaten und Ole GmbH Ludwig-Hirschberger-A llee 11, 85276 Pfaffenhofen a. d. llm	
Sample size:	1 sample	
Laboratory-Nr.:	L l	
Sample type:	Food Ingredient	
Description:	Sample description:	Organic Sunflower Kernels
	Sealed bag nr.:	2392534
	Lot nr.	1113
Sample taken by:	Customer	
Sample sent via:	Courier	
Sample receipt:	14.05.2018	
Sample container	Debasafe	
Sample quality:	perfect	
Analysis period:	14.05.2018 – 17.05.2018	

Pesticide Analysis: Multi method

The analysis regarding pesticides included the substances listed in the attached list of active ingredients for pesticide screening with the limits of detection given therein.

Parameter	Method	Result	UoM
Pesticide	QuEChERS DIN EN 15662, Defined with GC-M S/ MS und LC-MS/MS	n.n.	

Evaluation: The maximum residue levels stipulated by Regulation (EC) 396/2005 and the Residue Maximum Amount Ordinance (RHmV) are complied with.

The Bundesverband Naturkost Naturwaren (BNN) e.V. recommends an orientation value of a maximum of 0.01 mg / kg OS for pesticides in organic products.

This orientation value, taking into account the analytical criteria for the substances listed in the appendix with a limit of detection of 0.01 mg/kg OS, is met without objection.

Commentary: Analysis results relate exclusively to the samples examined. The cited standards refer to the currently valid version, unless otherwise stated. The partial reproduction of the analysis report requires the written approval of SYNLAB Analytics & Services Germany GmbH. This analysis report has been validated and approved by the person below.

Abbreviations, Symbols: --: not determined / not applicable, (F): outsourcing to accredited laboratories, (S): implementation at other SYNLAB locations; (N): not accredited analysis procedure, BG: limit of detection, FG: crude weight, not determined.: not applicable, n.n.: not proven, n.v.: not available, OF: surface, OS: original substance, TM: dry mass, TS: dry substance; 1'-l,:Limit-/Warning level Upper-/Lower, 71":,i: Guideline Upper-/Lower

Jena, on 17.05.2018

SYNLAB Analytics & Services Germany GmbH
Standort Jena
Orlaweg 2
07743 Jena
Deutschland

SYNLAB Analytks & Services Germany GmbH Orlaweg 2 07743 Jena
Kramerbrau Saaten und Ole GmbH
Ludwig-Hir schberger-Allee 11
85276 Pfaffenhofen a. d. Ilm
Deutschland

1hr Ansprechpartner:
Dr. Carsten Loser
wiss. Mitarbeiter
Arbeitsgruppe ROckstande und Kontaminanten

Telefon 03641/ 30 96 - 350
carsten.loeser@synlab.com
www.synlab.de

Analysis Report referencing Order # F 07940-18

Customer:	Kramerbrau Saaten und Ole GmbH Ludwig-Hirschberger-Allee 11, 85276 Pfaffenhofen a. d. Ilm
Sample size:	1 Sample
Sample type:	Food Ingredient (lx)
Sample taken by	Customer, 17.04.2018
Sample receipt:	20.04.2018
Analysis period:	20.04.2018 to 30.04.2018

Ladies and Gentlemen,

Herewith we are sending you the analysis results regarding the above referenced order.

With kind regards,
SYNLAB Analytics & Services Germany GmbH

UniCredit
Bank AG
Jena ·
IBAN
DE68 8302
0087 0004
1900 09 ·
SWIFT
HYVEDEM
M463

SYNLAG

Analysis report for Order #F 07940 - 18L1

Document-Nr.F2018 -007940 Ll- 0

Customer:	Kramerbrau Saaten und Ole GmbH Ludwig-Hirschberger-A llee 11, 85276 Pfaffenhofen a. d. llm	
Sample size:	1 sample	
Laboratory-Nr.:	L l	
Sample type:	Food Ingredient	
Description:	Sample description:	Organic Sunflower Kernels
	Sealed bag nr.:	2392337
	Lot nr.	1054
Sample taken by:	Customer, 17.04.2018	
Sample sent via:	Courier	
Sample receipt:	20.0 4.2018	
Sample container	Debasafe	
Sample quality:	perfect	
Analysis period:	20.04.2018 - 30.04.2018	

Chemical-physical Analysis

Parameter	Method	Result	UoM
Oil content	Hexane extraction of the pure seed, ISO R 659-1998	60.60	%OS

Chemical-physical Analysis

Parameter	Method	Result	UoM
Acid value	ASU §64 LFGB L 13 .00-5; DIN EN ISO 660: 2009	0.43	mg KOH/g Fett
Free Fatty Acids (FFA)	Calculated on the basis of average molecular mass of Oleic Acid (282 g/mol)	0.22	%

Pesticide Analysis: Multi method

The analysis regarding pesticides included the substances listed in the attached list of active ingredients for pesticide screening with the limits of detection given therein.

Parameter	Method	Result	UoM
Pesticide	QuEChERS DIN EN 15662, Defined with GC-M S/ MS und LC-MS/MS	n.n.	

Pesticide Analysis: Single Method

Parameter	Method	Result	UoM
Glyphosate	Food PA S41, LC-MS/MS	<0.01	mg/kg
AMPA	Food PA 541, LC-MS/MS	<0.0 1	mg/kg
Glufosinate	Food PA 541, LC-M S/ MS	<0.01	mg/kg

SYNLAB

Analysis report for Order Nr. F 07940 - 18LI

Documents-Nr.F2018-007940LI-O

Note: Fat extraction of acid value: cold extraction with hexane

Evaluation: The maximum residue levels stipulated by Regulation (EC) 396/2005 and the Residue Maximum Amount Ordinance (RHmV) are complied with.

The Bundesverband Naturkost Naturwaren (BNN) e.V. recommends an orientation value of a maximum of 0.01 mg / kg OS for pesticides in organic products.

This orientation value, taking into account the analytical criteria for the substances listed in the appendix with a limit of detection of 0.01 mg/kg OS, is met without objection.

Commentary: Analysis results relate exclusively to the samples examined. The cited standards refer to the currently valid version, unless otherwise stated. The partial reproduction of the analysis report requires the written approval of SYNLAB Analytics & Services Germany GmbH. This analysis report has been validated and approved by the person below.

Abbreviations, Symbols: --: not determined / not applicable, (F): outsourcing to accredited laboratories, (S): implementation at other SYNLAB locations; (N): not accredited analysis procedure, BG: limit of detection, FG: crude weight, not determined.: not applicable, n.n.: not proven, n.v.: not available, OF: surface, OS: original substance, TM: dry mass, TS: dry substance; 1'-I,:Limit-/Warning level Upper-/Lower, 71",i: Guideline Upper-/Lower

Jena, on 30.04.2018

Dr. Carsten Loser
wiss. Mitarbeiter

Arbeitsgrupp e RUckstiinde und Kontaminan t en

SYNLAB

www .s ynlab.de

Pesticide-Screening in Fruits, Vegetables and Cereals according to BNN-Guidelines

(Page 1 3)

Active Ingredient List for Pesticide Screening							
Substance	Det.•:BG• (mg/kgOS1	Substance	Det. •:BG• (mg/kg OS1	Substance	Del.•: BG• [mg/kg OS1	Substance	Del.•: BG• [mg/kgOS*)
1-Naphtyalcetamid NAD	LC:0,01	Bioheynl	GC:0,01	Chlorthionhos	GC: 0,01	Oichlorbenzoohenon,-44'	GC: 0,01
2,4,5-T	LC:O,Q1	8itertanol	LC: 0,01	Chlortoluron	LC: 0,01	Dichlororoo(2,4-DP\	LC: 0,01
2,4,5-TP	LC:0,01	Bixafen	LC: 0,01	Chlozolinat	GC: 0,01	Dichlorvos	GC: 0,01
2,4,6-Tirchlorphenol	LC:0,01	Boscalid	LC: 0,01	Chromafenozid	LC: 0,01	Diclobutrazol	GC:0,01
2,4-0	LC: 0,01	Bromacil	LC: 0,01	Cinidon-ethyl	LC: 0,01	Diclofoo, freie Saure	LC:0,01
2,4-08	LC: 0,01	Bromfenvinnhos(-ethyl]	LC: 0,01	Cinosulfuron	LC: 0,01	Didofoo-methyl	GC:0,01
2,4-Dimethlyanilin	LC: 0,01	Bromocyclen	GC: O,Q1	Clethodim	LC: 0,01	Dicloran	GC:0,01
2,6-0ichlorbenzamid	LC: 0,01	Bromoohos(-methyl]	GC:O,Q1	Climbazb	LC: 0,01	Dicofol	GC: 0,01
2-Phenylphenol	GC:0,01	Bromophos-ethyl	GC: 0,01	Clodinafoo	LC:0,01	Oicrotoohos	LC: 0,01
3,4-0ichloranilin	GC:0,01	8romoxynil	LC: 0,01	Clodinafo1rorooargyl	LC:0,01	Oieklrin	GC:0,01
3,5-0ichloranilin	GC:O,Q1	8romoxyni-methylether	GC:0,01	Clofentezin	LC:0,01	Oiethofencarb	LC: 0,01
3-Chloranilin	GC:0,01	8romorooylat	GC: 0,01	Clomazon	LC: 0,01	Difenacoum	LC:O,Q1
4-Chlorohenoxyessigsaure	LC: 0,01	8romuconazol	LC: 0,01	Cloouinotcet	LC: 0,01	Difenoconazole	LC: 0,01
Acephat	LC: 0,01	Bupirimate	LC: 0,01	CloQuintocet-mexyt	LC:0,01	Difenoxuron	LC: 0,01
Acetamiprid	LC: 0,01	8uorofezin	LC: 0,01	Clothianidin	LC: 0,01	Oiflovidazin (Flufenzin)	LC: 0,01
Acetochlor	LC: 0,01	Butafenacil	LC: 0,01	Coumaohos	LC:0,01	Oiflubenzuron	LC: 0,01
Acifluorfen	LC: 0,01	Butralin	GC: 0,01	Crimidin	LC:0,01	Oiflufenican	GC:O,Q1
Aclontten	GC: 0,01	Buturon	LC: 0,01	Cyanazin	LC: 0,01	Oimefox	LC: 0,01
Acrinathrin	GC: 0,01	Cadusafos	LC: 0,01	Cyanofenphos	GC: 0,01	Oimefuron	LC:0,01
Alachlor	LC: 0,01	Carbary!	LC: 0,01	Cyanoohos	GC: 0,01	Oimethachlor	LC:0,01
Akficarb	LC: 0,01	Carbendazim	LC: 0,01	Cyazofamid	LC:0,01	Oimethenamid-o	LC: 0,01
Akficarb-sutton	LC: 0,01	Carbetamide	LC: 0,01	Cyclanilid	LC:0,01	Dimethion	GC: 0,01
Akficarb-suttoxid	LC: 0,01	Carbofuran	LC: 0,01	Cycloat	GC:0,01	Dimethoat	LC: 0,01
Aldrin	GC: 0,01	Carbofuran-3-hydroxy	LC:0,01	Cycloxydim	LC: 0,01	Dimethomorph	GC: 0,01
Allethrin	GC: 0,01	Carboohenothionl-ethyll	GC: 0,01	Cvflufenamid	LC: 0,01	Oimoxvstrobin	LC: 0,01
Ametocrtadin	LC: 0,01	Carbosuttan	LC:0,01	Cyfluthrin (-beta)	GC:0,01	Diniconazole	GC:0,01
Ametryn	LC:0,01	Carboxin	LC:0,01	Cyhalolop-butyl	GC:0,01	Oinocap	LC:0,01
Amidosulfuron	LC:0,01	Carlentrazon	LC:0,01	Cyhalothrin-Gamma	GC:O,Q1	Dinoseb	LC:0,01
Aminocarb	LC: 0,01	Carlentrzaon-ethl y	LC: 0,01	Cyhalothrin-Lambda	GC:O,Q1	Oinotefuran	LC:0,01
Amitraz	LC: 0,01	Cartao	LC: 0,01	Cvmoxanil	LC:0,01	Dinoterb	LC:0,01
Aramite	LC: 0,01	Chinomethionat	GC: 0,01	Cypermethrin	GC:0,01	Oioxacarb	LC: 0,01
Asulam	LC: 0,01	Chloranthraniliorol	LC: 0,01	Cyohenothrin	GC: 0,01	Oioxathion	LC: 0,01
Atrazin	LC:0,01	Chlorbensid	GC: 0,01	Cvoroconazole	LC: 0,01	Oiohenaidh	LC:0,01
Atrazin-desethyl	LC:0,01	Chlorbenzilat	GC: 0,01	Cyorodinil	GC: 0,01	Diohenytamin	GC: 0,01
Atrazindessoorooyl	LC: O,Q1	Chlorbromuron	LC:0,01	Cyromazin	LC: 0,01	Disuttoton	LC:0,01
Avenmectin 81a	LC: 0,01	Chlorbulam	LC:0,01	Oaminoxid	LC:0,01	Disuttoton-Sutton	LC: 0,01
Avermectin 81b	LC: 0,01	Chlordan-cis	GC: 0,01	00D-o,o'	GC: 0,01	Oisulfoton-Suttoxid	LC: 0,01
Azaconazol	LC:0,01	Chlordan-oxy	GC: 0,01	ODD-o,o'	GC 0,01	Oitalimfos	LC: 0,01
Azimsutturon	LC: 0,01	Chlordan-trans	GC: 0,01	ODE-o,p'	GC: 0,01	Oithianon	LC:0,01
Azinphos-ethyl	LC: 0,01	Chlorfenapyr	GC: O,Q1	OOE-o,o'	GC: 0,01	Diuron	LC:0,Q1
Azinphosmethyl	GC: 0,01	Chlorfenroo-methyl	GC: O,Q1	OOT-o,p'	GC: 0,01	OMST	LC:0,01
Aziorotryn	LC: 0,01	Chlorfenson	GC: 0,01	DOT-oo'	GC: 0,01	DNOC	LC: 0,01
Azoxystrobin	GC: 0,01	Chlorfenvinphos	GC:0,01	DEET Oiethyltoluamid	LC:0,01	Dodine	LC: 0,01
Barban	LC:0,01	Chlorfluazuron	LC:0,01	Oeltamethrin	GC: 0,01	Emamectin 81a	LC:0,01
Beflubutamid	LC: 0,01	Chloridazon	LC: 0,01	Demeton-S-methyl	LC 0,01	Emamectin 81b	LC: 0,01
Benalaxyl	LC:0,01	Chlormeohos	GC: 0,01	Demeton-S-methytsulfon	LC 0,01	Endosuttan-aloha	GC:0,01
Bendiocarb	LC: 0,01	Chloroneb	GC: 0,01	Demeton-S-methylsulfoxid	LC 0,01	Endosulfan-beta	GC: 0,01
Benfluralin	GC: 0,01	Chloroxruon	LC: 0,01	Desmedi am	LC:0,Q1	Endosulfan-sutfat	LC:0,01
Benfuracarb	LC: 0,01	Chlorohacinon	LC: 0,01	Desmetryn	: 0,01	Endrin	GC: 0,01
Benomyl	LC: 0,01	Chlororooham	GC: 0,01	Diafenthiuron	LC: 0,01	Endrin-Akfehyd	GC:0,01
Bensutturon-methyl	LC:0,01	Chlorpropylat	GC:0,01	Oialttos	GC: 0,01	EPN	GC:0,01
Bentazon	LC: 0,01	Chloroyrttos[-ethyl]	GC: 0,01	Diallat	GC:0,01	Eooxiconazole	GC:0,01
Bentazon-6-0H	LC: 0,01	Chloroyrifos-methyl	GC: 0,01	Oiazinon	LC: 0,01	EPTC	GC: 0,01
Bentazon-8-0H	LC: 0,01	Chlorsulfuron	LC: 0,01	Oibrombenzoohenon,-4'	GC:0,01	Estenvlearat	GC: 0,01
Benthiavalicarbisopropyl	LC: 0,01	Chlortha-ldimethyl	GC:0,01	Oicamba	LC:0,01	Etaconazol	LC: 0,01
Bifenazat	LC: 0,01	Chlorthalonil	GC:0,01	Oichlobenil	GC: 0,01	Ethamestutturo-nmethyl	LC: 0,01
Bifenox	.01	Chlorthiamid	LC:0,01	Oichlofenthion	GC: 0,01	Ethidimuron	LC:0,01
Bttenthrin	GC:0,01	Chlorthion	GC:0,01	Oichlofluanid	LC:0,01	Ethiofencarb	LC: 0,01

SYNLAB

www.synlab.de

Pesticide-Screening in Fruits, Vegetables and Cereals according to BNN-Guidelines

(Page 2 of 3)

Active Ingredient List for Pesticide Screening

Substanz	Det.*:BG* (mg/kg OS*]	Substanz	Det.*:BG* [mg/kg OS1	Substanz	Det. *:BG* [mg/kg OS*]	Substanz	Det.*: BG* [mg/k g OS*]
Ethion	LC: 0,01	Flufenoxuron	LC:0,01	Iodosutturon-methyl	LC: 0,01	Metrafenone	LC: 0,01
Ethirimol	LC: 0,01	Flumetralin	GC: 0,01	Ioxynil	LC: 0,01	Metribuzin	GC: 0,01
Ethofumesat	LC: 0,01	Flumioxazin	GC: 0,01	Ioconazol	LC: 0,01	Metsutturon-methyl	LC:0,01
Ethofumesat-2-keto	GC: 0,01	Fluometuron	LC: 0,01	Iprobenphos	LC: 0,01	Mevinphos	LC: 0,01
Ethoprophos	LC: 0,01	Fluopicolid	LC: 0,01	Iprodion	GC: 0,01	MilbemycinA3	LC: 0,01
Ethoxyanui	GC: 0,01	Fluopyram	LC:0,01	Iprovalicarb	LC: 0,01	MilbemycinA4	LC:0,01
Ethoxysulfuron	LC:0,01	Fluoroglycofen-ethyl	LC:0,01	Isazophos	LC: 0,01	**Mirex**	GC: 0,01
Etofenprox	GC:0,01	Fluotrimazol	GC: 0,01	Isocarbophos	GC:0,01	**MNBA**,4-Methanesulfonyl-2-nitrobenzoic acid	LC: 0,01
Etoxazol	GC:0,01	Fluoxastrobin	LC: 0,01	Isodrin	GC: 0,01	Molinat	GC: 0,01
Etriidiazole	GC:0,01	Flupyrsutturon-methyl	LC: 0,01	Isofenphos	GC: 0.01	Monocrotophos	LC: 0,01
Etrimfos	LC:0,01	Fluazinconazole	LC: 0,01	Isofenphos-methyl	GC: 0,01	Monolinuron	LC:0,01
Famoxadon	LC: 0,01	Flurochloridone	LC: 0,01	Isoprocarb	LC:0,01	Monuron	LC: 0,01
Fenamidon	GC:0.01	Fluroxypyr	LC: 0,01	Isoprothiolan	LC:0,01	Myclobutanil	GC: 0,01
Fenamiphos	LC: 0,01	Fluroxypyr-meptyl	LC: 0,01	Isoproturon	LC:0,01	Napropamide	LC:0,01
Fenamiphossulfon	LC: 0,01	Flurprimidol	LC: 0,01	Isopyrazam	LC:0,01	Neburon	LC:0,01
Fenamiphos-sulfoxid	LC: 0,01	Flurtamon	GC:0,01	Isoxaben	LC:0,01	Nicosutturon	LC: 0,01
Fenarimol	LC:0,01	Flusilazole	LC:0,01	Isoxaflutol	LC:0,01	Nitenpyram	LC:0,01
Fenazaquin	LC:0,01	Fluthicaet-methyl	LC:0,01	Kresoxim-methyl	GC:0,01	Nitralin	GC:0,01
Fenbuconazole	LC:0,01	Flutolanil	LC:0,01	Lenacil	LC:0,01	Nitrofen	GC: 0,01
Fenbutatinoxid	LC: 0,01	Flutriafol	LC:0,01	Linuron	LC: 0,01	Nitrothalisopropyl	GC: 0,01
Fenchlorphos	GC: 0,01	Fluvalinat-etau	GC:0,01	Lufenuron	LC:0,01	Norflurazon	LC:0,01
Fenchlorphosoxon	GC: 0,01	Fluxapyroxad	LC:0,01	Malaoxon	GC: 0,01	Novaluron	LC:0,01
Fenhexamid	LC:0,01	Folpet	GC:0,01	Malathion	GC:0,01	Nuarimol	GC:0,01
Fenitrothion	GC: 0,01	Fonofos	LC:0,01	Mandioropamid	LC:0,01	Omethoat	LC:0,01
Fenobucarb	LC:0,01	Foramsulfuron	LC:0,01	**MCPA**	LC:0,01	Oryzalin	LC:0,01
Fenoxaprop-ethyl	LC: 0,01	Forchlorfenuron	LC:0,01	**MCPB**	LC:0,01	Oxadiargyl	LC:0,01
Fenoxaprop-P	LC: 0,01	Formetanat	LC:0,01	Mecarbam	GC: 0,01	Oxadiazon	LC:0,01
Fenoxycarb	LC: 0,01	Formothion	LC: 0,01	Mecoprop (MCPP)	LC:0,01	Oxadixyl	LC: 0,01
Fenpiclonil	LC: 0,01	Fosthiazat	LC: 0,01	Mefenpyr-diethyl	LC:0,01	Oxamyl	LC: 0,01
Fenpropathrin	GC:0,01	Fuberidazole	LC: 0,01	Mepanipyrim	LC:0,01	Oxasutturon	LC: 0,01
Fenpropidin	LC:0,01	Furalaxyl	LC: 0,01	Mepanipyrim-hydroxy	LC: 0,01	Oxycabroxin	LC: 0,01
Fenpropimorph	LC: 0,01	Furathiocarb	LC:0,01	Mepronil	LC:0,01	Oxyfluorfen	GC:0,01
Fenpyroximate	LC: 0,01	Gibberilinsaure	LC: 0,01	Meotyldinocap	LC: 0,01	Paclobutrazol	LC: 0,01
Fenson	GC: 0,01	Halosutturon-methyl	LC: 0,01	Mesosutturon-methyl	LC:0,01	Paraoxon-ethyl)	LC:0,01
Fensulfothion	LC: 0,01	Haloxyfop	LC: 0,01	Mesotrion	LC: 0,01	Paraoxon-methyt	LC:0,01
Fenthion	GC: 0,01	Haloxyfop-2-ethoxy-ethyl	GC:0,01	Metafulmizon	LC: 0,01	Parathion[-ethyl]	GC:0,01
Fenthion-oxon	LC: 0,01	Haloxyfop.R methyl	LC:0,01	Metalaxyl	GC:0,01	Parathion-methyl	GC:0,01
Fenthion-oxon-sulfon	LC: 0,01	Heotachlor	GC: 0,01	Metaldehyde	LC: 0,01	Pebulat	GC: 0,01
Fenthion-oxon-sulfidx	LC: 0,01	Hepatchlorepoxid	GC: 0,01	Metamtiron	LC: 0,01	Penconazol	LC: 0,01
Fenthion-sutton	LC:0,01	Heptenophos	GC: 0,01	Metazachlor	LC: 0,01	Pencvcuron	LC: 0,01
Fenthion-suttoid	LC: 0,01	Hexachlorbenzol	GC: 0,01	Metconazole	LC:0,01	Pendimethalin	GC:0,01
Fenuron	LC: 0,01	Hexachlorcyclohexa-nalpha	GC: 0,01	Methabenzthiazuron	LC:0,01	Penoxsulam	LC: 0,01
Fenvalerat	GC: 0,01	**Hexachlorcyclohexan-beta**	GC: 0,01	Methacrifos	GC: 0,01	Pentachloranilin	GC: 0,01
Fipronil	LC: 0,01	Hexachlorcvclohexan-delta	GC: 0,01	Methamidophos	GC:0,01	Pentachloranisol	GC:0,01
Fieroni-lsutton	LC:0,01	Hexachlorcyclohexangamma	GC: 0,01	Methidathon	LC: 0,01	Penatchlorbenzen	GC: 0,01
Flamersoq freie Saure	LC:0,01	Hexaconazol	LC: 0,01	Methiocarb	LC: 0,01	Permtehrin	GC: 0,01
Flamprpo-isoeropyl	LC: 0,01	Hexaflumuron	LC:0,01	Methiocarl>-sutton	LC:0,01	Perthan	GC: 0,01
Flazasulfuron	LC:0,01	Hexazinon	LC:0,01	Methiocarl>-sulfoxid	LC: 0,01	Pethoxamid	LC: 0,01
Flonicamid	LC: 0,01	Hexylthiazox	LC: 0,01	Methon\"!	LC: 0,01	Phenmeiodham	LC: 0,01
Florasulam	LC: 0,01	Imazalil	LC:0,01	Methoprene	GC:0,01	Phenothrin	GC:0,01
Fluazifopfr,eie Saure	LC: 0,01	Imazamox	LC:0,01	Methoprotryn	LC: 0,01	Phenthoat	GC: 0,01
Fluazifop-P-butyl	LC:0,01	Imazaquin	LC: 0,01	Methoxychlor	GC: 0,01	Phorat	GC:0,01
Fluazinam	LC:0,01	Imazethapyr	LC: 0,01	Methoxyfenozid	LC:0,01	Phorsoxon	GC: 0,01
Flubendiamid	LC:0,01	Imazosutturon	LC:0,01	Metobromuron	LC: 0,01	Phorsoxonsutton	LC: 0,01
Flucycloxuron	LC: 0,01	Imibenconazol	LC:0,01	Metolachlor	LC:0,01	Phorat-sutton	LC:0,01
Flucythrinat	GC: 0,01	Imidacloprid	LC:0,01	Metolcarb	LC:0,01	Phosalone	GC: 0,01
Fludioxonil	LC: 0,01	Indoxacarb	LC:0,01	Metosulam	LC:0,01	Phosfolan	LC: 0,01
Flufenacet	LC:0,01	Iodofenphos	GC:0,01	Metoxuron	LC:0,01	Phosmet	GC:0,01

SYNLAB

www.synlab.de

Pesticide-Screening in Fruits, Vegetables and Cereals according to BNN-Guidelines

(Page 3 of 3)

Active Ingredient List for Pesticide Screening							
Substance	Det. *:BG* [mg/kgOS*]	Substance	Det. *:BG* [mg/kg OS1	Substance	Det.*:BG* [mg/kg OS*]	Substance	Det. *:BG* (mg/kg OS1
Phosphamidon	LC: 0,01	Pyridafol	LC: 0,01	Telodrin flsobenzan)	GC: 0,01	Trietazin	LC:0,01
Phoxim	LC: 0,01	Pyrida I	LC: 0,01	Tembotrion	LC: 0,01	Trifloxystrobin	GC: 0,01
Phtalimid	GC:0,01	Pyridaphenthion	LC: 0,01	TEPP	LC:0,01	Trifloxysulfuron	LC: 0,01
Picloram	LC: 0,01	Pyridat	LC: 0,01	Teorlaoxydim	LC: 0,01	Triflumizole	LC:0,01
Picolinafen	LC: 0,01	Pyrifenox	LC: 0,01	Terbacil	LC: 0,01	Triflumuron	LC: 0,01
Picoxystrobin	LC: 0,01	Pyrimethanil	GC: 0,01	Terbufos	GC: 0,01	Triflurlin	GC: 0,01
Pinoxaden	LC: 0,01	Pyriproxyten	LC:0,01	Terbufos-sutton	LC: 0,01	Triflusutturon-methyl	LC: 0,01
Piperonilbutoxid	GC:0,01	Pyroxsulam	LC:0,01	Terbufos-suttoxid	LC:0,01	Triforin	LC:0,01
Pirimicarb	GC:0,01	Quinalohos	LC:0,01	Terbumeton	LC:0,01	Trinexaoac	LC:0,01
Pirimicar-desmeth	GC:0,01	Quinmearc	LC:0,01	Terbuthylazin	LC: 0,01	Triticonazol	LC:0,01
Pirimicabr-desmethyttormamido	LC: 0,01	Quinocamin	LC: 0,01	Terbuthylazin-desethyl	LC: 0,01	Tritosutturon	LC:0,01
PirimiPhos-ethwt	GC:0,01	Quinoxyfen	GC: 0,01	Terbutryn	LC: 0,01	Vamidothion	LC:0,01
Pirimiphos-methyl	GC: 0,01	Quintozen	GC: 0,01	Tetrachlorvinphos	GC:0,01	Vinclozolin	GC: 0,01
Primisutturon-methil	LC: 0,01	Quizalofop	LC: 0,01	Tetraoonazol	GC:0,01	Warfarin	LC:0,01
Prochloraz	LC: 0,01	Quizalofop-ethyl	LC: 0,01	Tetradifon	GC:0,01	Zoxamid	LC: 0,01
Procymidon	GC: 0,01	Quizalofop-tefuryl	LC: 0,01	Tetrahydrophtalimid	GC:0,01		
Profenofos	LC: 0,01	Resmethrin	LC: 0,01	Tetramethrin	GC: 0,01		
Profluralin	GC: 0,01	Rimsutturon	LC:0,01	TNFA	LC:0,01		
Profoxydim	LC:0,01	Rotenone	LC:0,01	TNFG	LC: 0,01		
Promecarb	LC:0,01	S-421	GC: 0,01	Thiabendazol	LC: 0,01		
Prometon	LC: 0,01	Sebuthylazin	LC:0,01	Thiacloorid	LC: 0,01		
Prometryn	LC: 0,01	Sethoxydim	LC:0,01	Thiamethoxam	LC: 0,01		
Propachlor	LC: 0,01	Silafluofen	GC: 0,01	Thiazafluron	LC: 0,01		
Propamocarb	LC: 0,01	Silthiofam	LC:O,Q1	Thiencarbazomethyl	LC: 0,01		
Propanil	LC: 0,01	Simazine	LC:0,01	Thifensulfuron-thyl	LC: 0,01		
Propaouizafop	LC: 0,01	Simetryn	LC:0,01	Thiobencarb	LC: 0,01		
Propargite	LC:0,01	Spinosyn A	LC:0,01	Thiodicarb	LC: 0,01		
Propazin	LC: 0,01	Soinosyn D	LC:0,01	Thiofanox	GC:0,01		
Propetamphos	LC: 0,01	Spirodiclofen	LC: 0,01	Thiofanox-sttoxid	LC: 0,01		
Propham	LC: 0,01	Spiromesifen	LC: 0,01	Thiophanat-methyl	LC: 0,01		
Propiconazol	GC: 0,01	Soirotetramat	LC: 0,01	Tolclofos-methyl	GC:O,Q1		
Propoxur	LC: 0,01	Spirotetramat BYI08330-cis-enol	LC:0,01	Tottenpyard	LC:0,01		
Propoxycarbazon	LC: 0,01	Spirotetramat BYI08330-cis-keto-hydroxy	LC: 0,01	Tolylfluanid	GC: 0,01		
Propyzamid	LC: 0,01	Spirotetramat BYI08330-enol-glycosid	LC: 0,01	Topramezon	LC: 0,01		
Proquinazid	LC:0,01	Spirotetramat BYI08330-mono-hydroxy	LC: 0,01	Tralkoxydim	LC: 0,01		
Prosuttocarb	LC: 0,01	Siiroxamin	LC: 0,01	Triadimefon	LC:0,01		
Prosutturon	LC: O,Q1	Sulcofuron	LC: 0,01	Triadimenol	GC: 0,01		
Prothioconazol-desso	LC: 0,01	Sulcotrion	LC: 0,01	Tri-allate	GC: 0,01		
Prothiooonazole	LC: 0,01	Suttometuron-methyl	LC: 0,01	Triasutturon	LC:0,01		
Prothiofos	GC: 0,01	Suttosutturon	LC:0,01	Triazamat	LC: 0,01		
Pymetrozin	LC: 0,01	Suttotep	LC: 0,01	Triazophos	LC:0,01		
Pyraclostrobin	LC: 0,01	Sulorophos	LC:0,01	Triazoxid	LC:0,01		
Pyraflufen-ethyl	LC: 0,01	Tebuconazol	GC: 0,01	Tribenuro-nmethyl	LC:0,01		
Pyrazophos	LC: 0,01	Tebufenozid	LC: 0,01	Trichlorfon	LC:0,01		
Pyrethrin: eCinerin I & II	LC: 0,01	Tebufenpyrad	GC: 0,01	Trichloronat	GC: 0,01		
Pyrethrin-Jasmolin I & II	LC: 0,01	Tecnazen	GC: 0,01	TricloPyr	LC:0,01		
Pyrethrine Pyrethrin 1&11	L C: 0,01	Teflubenzuron	LC: 0,01	Tricyclazole	LC:O,Q1		
Pyridaben	LC: 0,01	Tefluthrin	GC: 0,01	Tridemomh	LC:O,Q1		

• AbKOrzungen Del.:
Detektionsmodul
GC: GC-MS/MS
LC: LC-MS/MS
BG: Bestimmungsgrenze
OS: Originalsubstzan

1-Food

Analytik & Consulting

Food GmbH Jena Analytik • Consulting. Orlaweg: 2. 07743 Jena

Kramerbrau Saaten und Ole GmbH
Eberstettener StraBe **14**
85276 Pfaffenhofen/Ilm
Deutschland

Filr Rilckfragen:
Dr. Mirko Ludwig
wissenschaftlicher Mitarbeiter
Arbeitsgruppe Instrumentelle **Analytik**
Tel.: 03641/ 30 96 - 320

Test Report # F 23782 - 16

Customer:	Kramerbrau Saaten und Ole GmbH Eberstettener StraBe 14, 8S276 Pfaffenhofen/Ilm
Sample Size:	1 Sample
Sample Type:	Food (lx)
Sampling:	Customer
Received:	22.12.2016
Test Period:	22.12.2016 to 03.01.2017

Dear Ladies and Gentlemen,

We send you the test reports on the above mentioned order.

With kind regards,
Food GmbH Jena Analytik - Consulting

)Food
Analytik & Consulting

Test Report #. F 23782 - 16LS Page 1 of 2

Document #F2016-023782 LS- 0

Customer:	Kramerbrau Saaten und Ole GmbH Eberstettener StraBe 14, 85276 Pfaffenhofen/Ilm	
Sample Size:	1 Sample	
Lab #.:	LS	
Sample Type:	Food	
Labeling::	Sample Name :	Organic Sunflower Protein HO (Mixed Sample)
	Lot #:	211
Sampling:	Customer	
Shipped:	Courier	
Received:	22.12.2016	
Condition:	Perfect	
Test Period:	22.12.2016- 03.01.2017	

Composition of Mixed Samples LS:

LI	**Sample:** Organic Sunflower Protein HO, **Container:** Debasafe, **Product:** Food, **Sampling:** Customer, 13.12.2016, **Sample Received:** 22.12.2016, **Intake Temperature:** uncooled, **Retained Sample #.:** 2388111, **Charge:** 211
LZ	**Sample:** Organic Sunflower Protein HO, **Container:** Debasafe, **Product:** Food, **Sampling:** Customer, 15.12.2016, **Sample Received:** 22.12.2016, **Intake Temperature:** uncooled, **Retained Sample #:** 2391691, **Charge:** 211
L3	**Sample:** Organic Sunflower Protein HO, **Container:**Debasafe, **Product:** Food, **Sampling:** Customer, 19.12.2016, **Sample Received:** 22.12.2016, **Intake Temperature:** uncooled, **Retained Sample #.:** 2391295, **Charge:** 211
L4	**Sample:** Organic Sunflower Protein HO, **Container:** Debasafe, **Product:** Food, **Sampling:** Customer, 19.12.2016, **Sample Received:** 22.12.2016, **Intake Temperature:** uncooled, **Retained Sample #.:** 2391251, **Charge:** 211

Pesticide Analysis: Multi-method

The analysis regarding pesticides included the substances listed in the attached list of active ingredients for pesticide screening with the limits of detection given therein (BG).

Parameter	Method	Results	Unit
Pesticide	QuEChERS DIN EN 15662, Bestimmung mit GC-MS/MS und LC-MS/MS	n.n.	

Rating: Results comply with the maximum residue levels stipulated by Regulation (EC) 396/2005 and the residue limit Ordinance (RHmV)..

The Bundesverband Naturkost Naturwaren (BNN) recommends no more than a maximum of 0.01 mg/kg OS for pesticides for organic products.

These results meet without objection, taking analytical criteria for the named substances in appendix with a limit of 0.01 mg/kg OS..

.

Comment: Test results relate exclusively to the listed samples. The partial reproduction of this report requires the written approval of Food GmbH. Unless otherwise noted, test reports are only valid with signature

)Food
Analytik & Consulting

Test Report # F 23782 - 16LS
Document #F2016-023782LS-0

Abbreviations, sybols: --: not determined / not applicable, (F): outsourcing to accredited laboratories, (N): non-accredited test procedure, BG: limit of quantification, FG: fresh weight, n.best .: not determined, na: not applicable, nn: not followed meadows, na: not available, OF: surface, OS: original substance, TM: dry matter, TS: dry matter; 1 '-. 1,: limit / warning level exceeded / fallen short of,? I: guidelines exceeded / fallen short of

Jena, on 03.01.2017

wissenschaftlicher Mitarbeiter
Arbeitsgruppe Instrumentelle Analytik

)Food
Analytik & Consulting

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 1 of 3)

List of active substances for Pesticide Screening							
Substance	Det.•: BG• [mg/kg OS•1	Substance	Det.•: BG• [mg/kg OS•1	Substance	Det. •: BG• [mg/kg OS*)	Substance	Det.•:BG • [mg/kg OS•1
1-Naohthvlacetamid NAD	LC:0,01	Bbhenvl	GC:0,01	Chbrthioohos	GC: 0,01	Dichlorbenznnhenon-4,4'	GC: 0,01
24 5-T	LC:0,01	Bttertanol	LC:0,01	Chbrtoluron	LC: 0,01	Dichlororoo (2,4-DPI	LC: 0,01
2,4,5-TP	LC:0,01	Bixafen	LC:0,01	Chbzolinat	GC: 0,01	Dichlorvos	GC: 0,01
2,4 6-Trichlorohenol	LC:0,01	Boscalid	LC:0,01	Chromafenozid	LC: 0,01	Diclobutrazol	GC:0,01
2,4-D	LC:0,01	Bromacil	LC:0,01	Cinidon thvi	LC:0,Q1	Dicloloo, Creie saure	LC: 0,01
2,4-DB	LC:0,01	Bromfenvinohosf-ethvil	LC:0,01	Cinosulfuron	LC: 0,01	Diclobo-methyl	GC:0,01
2,4-Dimethvlanilh	LC:0,01	Bromocvclen	GC:0,01	Ciethodim	LC: 0,01	Dicloran	GC:0,01
2,6-Dichlorbenzamid	LC:0,01	Bromoohos r-methvll	GC:0,01	Clirrbazol	LC: 0,01	Dicofol	GC:0,01
2-Phenviohenol	GC:0,01	Bronvv>hos thvl	GC:0,01	Clodinafoo	LC: 0,01	Dicrotonhos	LC: 0,01
3,4-Dichlornniin	GC:0,01	Bromoxvnil	LC:0,01	Clodinafoo-prooarovt	LC: 0,01	Dieldrin	GC:0 ,01
3,5-Dichloraniin	GC:0,01	Bromoxv,ni methvlether	GC:0,01	Clofentezin	LC: 0,01	Diethofencarb	LC:0,01
3-Chloranih	GC:0,01	Bromoroovtat	GC:0,01	Clomazon	LC: 0,01	Difenacoum	LC:0,0
4-Chlorphenoxvessiosaure	LC: 0,01	Bromuconazol	LC: 0,01	CioQuintocet	LC: 0,01	Difenoconazole	LC:0, 01
Acephat	LC:0,Q1	Buomate	LC:0,0	Cioauintocet-mexvl	LC: 0,01	Difenoxuron	LC: 0,01
Acetamiorid	LC: 0,01	Buorofem	LC: 0,01	Clothiaidin	LC: 0,01	D vidazin IFlufenzinl	LC: 0,01
Acetochlor	LC:0,01	Butafeancl	LC: 0,01	Coumanhos	LC:0,Q1	Diflubenzuron	LC: 0,01
Acifluorfen	LC: 0,01	Butrain	GC:0,0	Crimidin	LC: 0,01	Diflufenican	GC: 0,01
Aclonifen	GC:0,01	Buturon	LC:0,01	Cvanazin	LC: 0,01	Dimebx	LC:0,01
Acrinathrin	GC:0,01	Cadusafos	LC:0,01	Cvanofenohos	GC: 0,01	Dimefuron	LC:0,01
Alachlor	LC: 0,01	Carbarvl	LC: 0,01	Cvanoohos	GC: 0,01	Dimethachlor	LC:0,01
Aldicarb	LC: 0,01	Carbendazim	LC:0,01	Cvazofamid	LC:0,01	Dimethenamid-p	LC:0,01
Aldicarb-sullon	LC: 0,01	Carbetamide	LC:0,01	Cvclanilid	LC:0,01	DimethiDin	GC: 0,01
Aldicarb-sulfoxid	LC: 0,01	Carbofuran	LC:0,01	Cvcloat	GC: 0,01	Dimethoat	LC: 0,Q1
Aldrin	GC:0,01	Carbofuran-3-hvdroxv	LC: 0,01	Cvcloxvdim	LC:0,01	Dimethomoroh	GC:0,01
Allethrin	GC:0,01	Carboohenothion-lethvil	GC:0,01	Cvflufenamid	LC: 0,01	Dimoxvstrobin	LC: 0,01
Ametoctradin	LC:0,01	Carbosu an	LC:0,01	Cvfluthrin r-betal	GC: 0,01	Diniconazole	GC: 0,01
Ametrvn	LC: 0,01	Carboxin	LC:0,01	Cvhalofoo-butvi	GC: 0,01	Dinocao	LC: 0,01
Amidosulfuron	LC:0,01	Carlentrazon	LC:0,01	Cvhalothrin-Gamma	GC: 0,01	Dinoseb	LC: 0,01
Aminocarb	LC:0,01	Carlentrazon-ethvl	LC: 0,01	Cvhalothrin-Lambda	GC: 0,01	Dinotefuran	LC: 0,01
Amitraz	LC:0,01	canao	LC:0,01	Cvmoxanil	LC: 0,01	Dinoterb	LC: 0,01
Aramite	LC:0,01	ChinornethiOnat	GC: 0,01	Cv= methrin	GC: 0,01	Dioxacarb	LC: 0,01
Asulam	LC:0,01	Chbrathranlil rol	LC:0,01	Cvohenothrin	GC:0,01	Dioxathbn	LC:0,01
Atrazin	LC:0,01	Chbrbensid	GC:0,01	Cvoroconazole	LC:0,01	Dinhenamid	LC:0,01
Atrazin-desethvi	LC:0,01	Chbrbenzilat	GC:0,01	Cvarodinl	GC: 0,01	Dinhenviamin	GC:0 ,01
Atrazin-desiSopropyl	LC:0,01	Chbrbromuron	LC:0,01	Cyromazin	LC: 0,01	Disulbton	LC:0,01
Avennectin 81a	LC:0,01	Chbrbufam	LC:0,0	Damnozid	LC: 0,01	Disufloton-Sulon	LC: 0,01
Avennectin 81b	LC:0,01	Chbrdan-cis	GC:0,01	DDDo,p'	GC: 0,01	Disulbton-Sulbxid	LC: 0,01
Azaconazol	LC:0,01	Chbrdan-oxv	GC:0,01	DDDn,o'	GC:0,01	Ditafimfos	LC: 0,01
Azimsulfuron	LC:0,01	Chbrdan-trans	GC:0,01	DDE-o,p'	GC:0,01	Dithianon	LC: 0,01
Azinohos-ethvl	LC 0,0	Chbrfenaovr	GC:0,01	DDE-D,D'	GC: 0,01	Diuron	LC: 0,01
Azinphos-methYl	GC:0,01	Chbrfenoroo-methyl	GC:0,01	DDT-op'	GC:0,01	DMST	LC: 0,01
Aziorotrvn	LC: 0,01	Chbrfenson	GC:0,01	DDT-D,D'	GC: 0,01	DNOC	LC: 0,01
Azoxvstrobin	GC:0,01	Chbrfenvinphos	GC:0,01	DEET Diethyltoluamid	LC: 0,01	Dodine	LC:0,01
Barban	LC: 0,01	Chbrfluazuron	LC: 0,01	Deltamethrin	GC:0,01	Emamectin B1a	LC: 0,01
Befiubutamkl	LC: 0,01	Chbrklazon	LC: 0,01	Demeton-S-methvl	LC: 0,01	EmamectinB1b	LC: 0,01
Benalaxvi	LC: 0,01	Chbrmeohos	GC:0,01	Demeton-Smethvtsu on	LC: 0,01	Endosuttan-aloha	GC: 0,01
Bendiocarb	LC:0,01	Chklroneb	GC:0,01	Demeton-S-methvisuoxid	LC: 0,01	Endosu an-beta	GC: 0,01
Benfturalin	GC:0,01	Chbroxuron	LC:0,01	Desmediaham	LC: 0,Q1	Endosu an-su at	LC: 0,01
Benfurncarb	LC: 0,01	Chklrohacinon	LC: 0,01	Desmetrvn	LC:0,01	Endrin	GC: 0,01
Benomyl	LC: 0,01	Chbrorooham	GC:0,01	Diafenthiuron	LC: 0,01	Endrin-Aldehvd	GC:0,01
Bensutturon-methyl	LC: 0,01	Chbroroovtat	GC: 0,01	Dialifos	GC: 0,01	EPN	GC: 0,01
Bentazon	LC: 0,01	ChbrDYl'ifos l-ethvll	GC: 0,01	Diallat	GC: 0,01	Eooxiconazole	GC: 0,01
Bentazon-6-OH	LC:0,01	Chbrovrifos-methyl	GC:0,01	Diazinon	LC: 0,01	EPTC	GC: 0,01
Bentazon-8-OH	LC:0,01	Chbrsulfuron	LC:0,01	Dbrorrlleuochenon-4,4'	GC: 0,01	Esfenvalerat	GC: 0,01
Benthiavalk:arb-isoproovi	LC:0,01	Chbrthal-dimethvl	GC:0,01	Dicamba	LC: 0,01	Etaconazol	LC: 0,01
Bifenazat	LC:0,01	Chbrthalonl	GC: 0,01	Dichlobenil	GC: 0,01	Ethametsu uron-methvi	LC:0,Q1
Bifenox	GC:0,01	Chklrthiamid	LC:0,01	Diehlofenthion	GC:0,01	Ethidirruron	LC: 0,01
Bifenthrin	GC:0,01	Chbrthion	GC:0,01	Dichlofluanid	LC:0,01	Ethiofencarb	LC:0,Q1

)Food
Analytik & Consulting

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Seite 2 von 3)

List of active substances for Pesticide Screening

Substance	Det.*:BG* [mg/kg OS*]	Substance	Det.*:BG* [mg/kg OS*]	Substance	Det.*:BG* [mg/kg OS*]	Substance	Det.*:BG* [mg/kg OS*]
Ethion	LC:0,01	Fufenoxuron	LC:0,01	Iodosutturon-methvl	LC: 0,01	Metrafeoone	LC: 0,01
Elhirimol	LC:0,01	FkJmetrai n	GC:0,01	Ioxvnil	LC: 0,01	Metribuzin	GC:0,01
Ethofumesat	LC: 0,01	FkJmioxazil	GC:0,01	Ioconazol	LC: 0,01	MetsuWuron-methvl	LC: 0,01
Ethofumesat-2-keto	GC:0,01	FkJometuron	LC:0,01	Inmbenohos	LC: 0,01	Mevinohos	LC: 0,01
Ethnnroohos	LC:0,01	FkJooicolid	LC:0.01	Iorodion	GC:0,01	Milbemvcin A3	LC:0,01
Elhoxvauil	GC:0,01	F•=vram	LC:0,01	Iorovalearb	LC: 0,01	Milbemvcin A4	LC: 0,01
Elhoxysutturon	LC:0,01	FkJo,oalvcofen-ethvl	LC:0,01	Isazocihos	LC: 0,01	Mirex	GC: 0,01
Etofenprox	GC:0,01	FkJotrimazol	GC:0,01	Isocarbophos	GC:0,01	MNBA; 4-Methanesulfonyl-2-nitrobenzoc acid	LC: 0,01
Etoxazol	GC:0,01	FkJoxastrobin	LC:0,01	Isodrin	GC:0,01	Molinat	GC:0,01
Etridiazole	GC:0,01	FkJovrsunuoro-melhvl	LC:0,01	Isofenohos	GC:0,01	Monocrotoohos	LC: 0,01
Etrimfos	LC:0,01	FkJauinconazole	LC:0,01	Isofenohos-methvl	GC:0,01	Monolinuron	LC: 0,01
Famoxadon	LC:0,01	FkJrochlOrKiooe	LC:0,01	Isoorocarb	LC: 0,01	Monuroo	LC: 0,01
Fenamidon	GC:0,01	FkJro""nvr	LC:0,01	Isoorothiolan	LC: 0,01	Mvcbbutanil	GC: 0,01
Fenamiohos	LC:0,01	FkJro""nvr-menM	LC: 0,01	Isooroturoo	LC: 0,01	Na,..nnamide	LC: 0,01
Fenamiohos-sunon	LC: 0,01	FkJrorimidol	LC: 0,01	Isoovrazam	LC:0,01	Neburon	LC: 0,01
Fenamiohos-sunoxid	LC:0,01	FkJrtamon	GC:0,01	Isoxaben	LC: 0,01	Nicosunuron	LC:0,01
Fenarimol	LC: 0,01	FkJsilazole	LC:0,01	Isoxaflutol	LC: 0,01	Nitennvram	LC:0,01
Fenazaquin	LC:0,01	Fluthiacet-methyl	LC:0,01	Kresoxim-methvl	GC: 0,01	Nitralin	GC: 0,01
Fenbuconazole	LC: 0,01	FkJtolani	LC: 0,01	Lenacil	LC:0,01	Nitrofen	GC: 0,01
Fenbuttainoxid	LC:0,01	FkJtriafol	LC: 0,01	Linuroo	LC: 0,01	Nitrothal-isooroovl	GC: 0,01
FenchlOrphos	GC:0,01	Fklvainate-tau	GC:0,01	Lufenuron	LC: 0,01	Norflurazon	LC: 0,01
FenchlOrphos-oxon	GC:0,01	Fklxaovroxad	LC:0,01	Malaoxoo	GC: 0,01	Novaluron	LC: 0,01
Fenhexamid	LC:0,01	Foloet	GC:0,01	Malathion	GC: 0,01	Nuarimol	GC: 0,01
Fenitrothion	GC:0,01	Fonofos	LC:0,01	Mandiomoamid	LC: 0,01	Omethoat	LC:0,ot
Fenobucarb	LC: 0,01	Foramsunuron	LC:0,01	MCPA	LC: 0,01	Orvzalin	LC: 0,01
Fenoxaoroo-elhvl	LC: 0,01	Forchlorfenuron	LC:0,01	MCPB	LC: 0,01	Oxadiaravl	LC: 0,01
Fenoxaoroo-P	LC: 0,01	Formetanat	LC: 0,01	Mecarbam	GC:0,01	Oxadiazon	LC: 0,01
Fenoxvr.arb	LC: 0,01	Formolhion	LC: 0,01	Mecop,op (MCPP)	LC: 0,01	Oxadixvl	LC: 0,01
Fenocbnil	LC: 0,01	Foslhiazat	LC: 0,01	Mefenovr-diethvl	LC:0,01	Oxamvl	LC: 0,01
Fenorooathrin	GC:0,01	Fuberidazole	LC:0,01	Meoaniovrin	LC: 0,01	Oxasulfuron	LC: 0,01
Fenoooidn	LC: 0,01	Furalaxvl	LC:0,01	Meoaniovrim-hvdroxvdoovl	LC:0.01	Oxvcarboxin	LC: 0,01
Fenorooimoroh	LC:0,01	Furathiocarb	LC:0,01	Meoronil	LC: 0,01	Oxvfluorfen	GC: 0,01
Fenovroximate	LC:0,01	GibberilnsaUre	LC:0,01	Meotvldinocao	LC:0,ot	Paclobutrazol	LC: 0,01
Fenson	GC:0,01	Habsufluron-melhvl	LC:0,01	Mesosunuron-melhvl	LC: 0,01	Paraoxoo 1-ethvll	LC: 0,01
Fensunothion	LC:0,01	Habxvloo	LC:0,01	Mesotrion	LC: 0,01	Paraoxon-meth,l	LC: 0,01
Fenlhioo	GC:0,01	Habxvfoo-2-elhoxv-elhvl	GC:0,01	Metaflumizoo	LC: 0,01	Parathion1-ethvll	GC: 0,01
Fenthioo-oxon	LC:0,01	Habxvfoo-R methvl	LC:0,01	Metal•""	GC:0,01	Parathon-math,l	GC: 0,01
Fenthioo-oxon-suoxon	LC:0,01	Heotachlor	GC:0,01	Metaldehvde	LC: 0,01	Pebulat	GC: 0,01
Fenthioo-oxoo-suwoxid	LC:0,01	Heptachlorepoxid	GC:0,01	Metamitron	LC: 0,01	Penconazol	LC:0.01
Fenthion-sutton	LC:0,01	Hectenoohos	GC:0,01	MetazachlOr	LC: 0,01	Pencw.uron	LC: 0,01
Fenthioo-suttoxid	LC:0,01	Hexachbrbenzol	GC:0,01	Metconazole	LC:0,01	Pendimelhalin	GC: 0,01
Fenuron	LC:0,01	Hexachbrcvclohexan-aloha	GC:0,01	Methabenzthiazuron	LC:0,01	Penoxsulam	LC:0,01
Fenvalerat	GC:0,01	Hexachbrcvclohexan-beta	GC:0,ot	Methacrffos	GC: 0,01	PentachlOraniln	GC: 0,01
Fioronil	LC:0,01	Hexachbrcvclohexan-delta	GC:0.01	Methamidoohos	GC: 0,01	PentachlOranisol	GC:0,ot
Fioroni-Isutton	LC:0,01	Hexachbrcvclohexan-aamma	GC:0,01	Methidathion	LC:0,01	PentachlOrbenzen	GC: 0,01
Flamoroo, freie Saure	LC:0,01	Hexaconazol	LC:0,01	Methiocarb	LC:0,ot	Permethrin	GC: 0,01
Flamroo-i<nnmnvt	LC: 0,01	Hexaflurruron	LC:0,01	Methiocarb-sutton	LC: 0,01	Perthan	GC: 0,01
Flazasutturon	LC:0,01	Hexazinon	LC:0,01	Methiocarb-suttoxid	LC: 0,01	Pethoxamid	LC: 0,01
Flonicamid	LC:0,01	Hexvthiazox	LC:0,01	Methornvl	LC: 0,01	Phenmedioham	LC: 0,01
FlOrasulam	LC: 0,01	Imazali	LC:0,01	Methoorene	GC:0,01	Phenothrin	GC: 0,01
Fluazffop, freie Saure	LC: 0,01	Imazamox	LC:0,01	Methoprotryn	LC: 0,01	Phenthoat	GC: 0,01
Fluazffop-P-butyl	LC:0,01	Imazaquin	LC:0,01	Metho=hlOr	GC: 0,01	Phorat	GC: 0,01
Fluazinam	LC: 0,01	Imazethaovr	LC:0,01	Methoxvfenozid	LC: 0,01	Phorat-oxon	GC:0,01
Flubendiamid	LC: 0,01	Imazosulfuron	LC: 0,01	Metobrornuron	LC: 0,01	Phorat-oxonsunon	LC:0,01
Flucvcbxuron	LC:0,Qt	Imibenconazol	LC: 0,01	Metolachbr	LC: 0,01	Phorat-suflon	LC: 0,01
Flucvthrinat	GC:0,01	Imidacborid	LC: 0,01	Metolcarb	LC: 0,01	Phosalone	GC: 0,01
Fludioxonil	LC: 0,01	Indoxacarb	LC:0,01	Metosulam	LC: 0,01	Phostolan	LC: 0,01
Flufenacet	LC: 0,01	Iodofenohos	GC:0,01	Metoxuron	LC: 0,01	Phosmet	GC:0,01

)Food
Analytik & Consulting

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 3 of 3)

List of active substances for Pesticide Screening							
Substance	Det, •:BG• [mg/kg OS•1	Substance	Det.•:BG• [mg/kg OS*]	Substance	Det.•:BG• [mg/kg OS"]	Substance	Det.•: BG• [mg/kg OS"]
Phosohanidon	LC:0,01	IPvridalol	LC:0,01	Telodrin llsobenzanl	GC:0,01	Trietazin	LC: 0,01
Phoxim	LC:0,01	Pvridalvl	LC: 0,01	Tembotrion	LC:0,01	TriflOxvstrooin	GC: 0,01
Phtalimid	GC:0,01	Pvmaohenlhion	LC: 0,01	TEPP	LC: 0,01	Trilloxvsulfuron	LC: 0,01
Pieloram	LC:0,01	IPvridat	LC:0,01	Teoraloxvdim	LC: 0,01	Trifunizde	LC: 0,01
Picoi nafen	LC:0,01	IPvritenox	LC:0,01	Terbacil	LC: 0,01	Triflumuron	LC: 0,01
Picoxvstrobn	LC:0,01	IPvrimethanil	GC:0,01	Terbufos	GC: 0,01	Trifluralin	GC:0,01
Pinoxooen	LC:0,01	IPvrinroxvfen	LC: 0,01	Terbufos-sulton	LC: 0,01	Triflusulfuron-methvi	LC: 0,01
Piperonyllutoxid	GC:0,01	IPvroxsulam	LC: 0,01	Terbufos-sultoxid	LC: 0,01	Triforn	LC: 0,01
Pirinicarb	GC:0,01	Qunalohos	LC:0,01	Terbumeton	LC: O,Q1	Trinexan	LC: 0,01
Pirinicarb-<lesmelhyt	GC:0,01	Qunmerac	LC: 0,01	Terbulhvlazin	LC: 0,01	Triliconazol	LC: 0,01
Pirinlcarb-desmelhvlformanido	LC:0,01	Qunoclanin	LC: 0,01	Terbulhytazin-desethyl	LC: 0,01	Tritosulfuron	LC: 0,01
Piriniphos-elhvl	GC:0,01	Qunoxvfen	GC:0,01	Terbutryn	LC:0,01	Vamidolhion	LC: 0,01
Piriniohos-methvl	GC:0,01	Quntozen	GC:0,01	Tetrachlorvinohos	GC:0,01	Vnclozoln	GC:0 ,01
Prinisulton-melhvl	LC: 0,01	Quizalofoo	LC:0,01	Tetraconazol	GC:0,01	Wartarin	LC:0,01
Prochloraz	LC: 0,01	Quizaiofoo-elhvl	LC:0,01	Tetradfon	GC: 0,01	Zoxanid	LC: 0,01
Procvmidon	GC:0,01	Quizaiofoo-tefurvl	LC:0,01	Tetrahydroohtalmid	GC:0,01		
Profenofos	LC:0,01	Resmelhrin	LC:0,01	Tetramelhrin	GC:0,01		
ProfkJralin	GC:0,01	Rimsulturon	LC:0,01	TFNA	LC: 0,01		
Profoxvdim	LC: 0,01	Rotenone	LC: 0,01	TFNG	LC:0,01		
Promecarb	LC: 0,01	S-421	GC:0,01	Thiabendazol	LC: 0,01		
Prometon	LC: 0,01	Sebuthvlazin	LC: 0,01	Thiacb"""	LC: 0,01		
Prometrvn	LC: 0,01	Selhoxvdim	LC:0,01	Thiamelhoxam	LC: 0,01		
ProPachlor	LC:0,Q1	Si afluofen	GC:0,01	Thiazafluron	LC: 0,01		
Propamocarb	LC: 0,01	Si Ihiofam	LC: 0,01	Thiencarbazon-melhvl	LC: 0,01		
Prooanil	LC: 0,01	Sinazine	LC: 0,01	TMensulturno-melhvl	LC: 0,01		
PrO!)aQuizafop	LC: 0,01	Sinetrvn	LC: 0,01	Thiobencarb	LC: 0,01		
ProoarQite	LC:0,D1	Soinosvn A	LC:0,01	Thiodicarb	LC: 0,01		
Prooazin	LC:0,01	Soinosvn D	LC:0,01	Thiofanox	GC:0,01		
Prooetamohos	LC:0,01	SDirodk:bfen	LC:0,01	Thiofano-xsultoxid	LC:0,D1		
Prooham	LC: 0,01	SDiromesifen	LC:0,01	Thioohanat-melhvl	LC:0,01		
Prooiconazol	GC: 0,01	Soirotetramat	LC:0,01	Tolclofos-melhvl	GC: 0,01		
Propoxur	LC:0,01	Spirotetramat BYI08330-cis-enol	LC:0,01	Toltenpyrad	LC: 0,01		
Propoxycarbazon	LC:0,01	Spirotetramat BYI08330-<:is--keto-hvdroxv	LC: 0,01	Tolytfluanid	GC: 0,01		
Propyzamid	LC:0,01	Spirotetramat BY08330-eno glycosid	LC:0,01	Topramezon	LC: 0,01		
Proquinazid	LC:0,01	SpirotetramatBYI08330-rrono-lhV<troxv	LC:0,01	Tralkoxydim	LC: 0,01		
Prosultocarb	LC: 0,01	SOiroxanin	LC:0,01	Triadimei:In	LC: 0,01		
Prosulturon	LC:0,01	Sulcofuron	LC:0,01	Triadimenol	GC:0,01		
Prolhioconazol-deslhiO	LC:0,01	SulcotriOn	LC:0,01	T-ri alate	GC:0,01		
Prothloconazole	LC: 0,01	Sultometuron-melhvl	LC:0,01	Triasulfuron	LC: 0,01		
Proti0fos	GC:0,01	Sultosulfuron	LC:0,01	Triazamat	LC: 0,01		
IPvmetrozin	LC: 0,01	Sultoteo	LC:0,01	Triazoohos	LC:O,Q1		
Pyraclostrooin	LC: 0,01	Suloroohos	LC:0,01	Triazoxid	LC: 0,01		
IPvrafkJfen-ethyl	LC:0,01	Tebuoonazol	GC:0,01	Tribenuron-melhvl	LC: 0,01		
IPvrazophos	LC: 0,01	Tebufenozid	LC:0,01	Trichlorfon	LC: 0,01		
Pyrethrine:CinerinI&II	LC:0,01	Tebufenovrad	GC:0,01	Trichloronat	GC:0,01		
IPvrethrnie:Jasmolin I &II	LC: 0,01	Tecnazen	GC:0,01	Triclopvr	LC: 0,01		
IPvrethrine: Pvrelhrn!&11	LC: 0,01	Teflubenzuron	LC:0,01	Tnrvclazole	LC: 0,01	Version 05-2015	
Pvridaben	LC: 0,01	Teflulhrin	GC:0,01	Tridemorph	LC: 0,01	Stand 19.05.2015	

• AbkOrzungen:
Det:. Deteklionsmodul
GC: GC-MS/MS
LC: LC-MS/MS
BG:Bestinmungsgrenze
OS: Originalsubstanz

1-Food
Ein Unternehmen von SYNLAB

www.food-jena.de
www.synlab.de

Food GmbH Jena Analyt,k -Consultmg Orlaweg 2 07743 Jena
Kramerbrau Saaten und Ole GmbH
Eberstettener StraBe 14
85276 Pfaffenhofen/Ilm
Deutschland

Fur ROckfragen:
Dr. Mirko Ludwig
wissenschaftlicher Mitarbeiter
Arbeitsgruppe Instrumentelle Analytik
Tel.: 03641 / 30 96 - 320

Test Report # F 08236 - 17

Customer:	Kramerbrau Saaten und Ole GmbH Eberstettener StraBe 14, 85276 Pfaffenhofen/Ilm
Sample Size:	1 Sample
Sample Type:	Food (Ix)
Sampling:	Client, 03.05.2017
Received:	08.05.2017
Test Period:	08.05.2017 to 15.05.2017

Dear Ladies and Gentlemen,

We send you the test reports on the above mentioned order.

With kind regards,
Food GmbH Jena Analytik - Consulting

FoodGmbH JenaAnalyt1k-Consulting O<laweg2 07743JenaITelefon•49(0)3641-3096340 Fax•49(0)3641-30963381mfo@food-1enade ,w,wfood-1enade
Handelsreg,ster Amtsgerocht Jena HRB 206 777 I Ust-ld -Nr DE 190 43 1111 I Geschaftsfuhrer Dr Bernd Giese Thomas Petzold
Bankverbmdung Un1Cred1t Bank AG Jena IBAN DE68 8302 0087 0004 1900 09 SWIFT HYVEDEMM463
Sparkasse Jena IBAN DE77 8305 3030 0000 0334 64 SMFT HELADEF1JEN

Food
Ein Unternehmen von SYNLAB

www.food-jena.de
www.synlab.de

Test Report # F 08236 - **17L4**

Document # F2017-008236 L4- 1

Customer:	Kramerbrau Saaten und Ole GmbH Eberstettener StraBe 14, 85276 Pfaffenhofen/llm
Sample Size:	1 Sample
Lab #:	L4
Sample Type:	Food
Labeling:	Sample Designation: Mischprobe Ll-3 Sunflower Protein< organic
Sampling:	Principal, 03.05.2017
Shipped:	Courier
Sample Received:	08.05.2017 (Nachauftrag FS-Spektrum per mail vom 10.05.2017 durch Frau Klingele)
Temperature:	Ambient temp
Condition:	Dismantled
Test Period:	08.05.2017 - 15.05.2017

Composition of the Mixed Sample: 4

II **Sample :** Organic Sunflower Protein, **Container:** Debasafe, **Product:** Food, **Sampling:** Customer, 03.05.2017, **Sample Received:** 08.0S.2017, **Intake Temperature:** uncooled, **Sample Condition:** perfect, **Retained Sample #.:** 2534120, **Charge:** 465

L2 **Sample:** Organic Sunflower Protein, **Container:** Debasafe, **Product:** Food, **Sampling:** Customer, 03.05.2017, **Sample Received:** 08.05.2017, **Intake Temperature::** uncooled, **Sample Condition:** perfect, **Retained Sample #.:** 2534122, **Charge:** 465

L3 **Sample:** Organic Sunflower Protein, **Container:** Debasafe, **Product:** Food, **Sampling:** Customer, 03.05.2017, **Sample Received:** 08.05.2017, **Intake Temperature::** uncooled, **Sample Condition:** perfect, **Retained Sample #.:.:** 2534147, **Charge:** 465

Chemical-physical Analysis

Parameter	Method	Results	Unit
Olgehalt	Extraktion mit Hexan in der reinen Saat, ISO R 659-1998	61,35	%OS

Chemical-physical Analysis

Parameter	Method	Results	Unit
Free Fatty Acids (FFA)	berechnet auf Grundlage der Durchschnittsmolmasse von Olsaure (282 g/mol)	0,18	%
Acid Value	ASU §64 LFGB L 13.00-5; DIN EN ISO 660:2009	0,36	mg KOH/g Fett

)Food
Ein Unternehmen van SYNLAB \ /

www.food-jena.de
www.synlab.de

Test Report # F 08236 - 17L4

Document-Nr.F2017-008236L4- 1

Chemical-physical Analysis

Parameter	Method	Results	Unit
C4:0 (Buttersaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	g/100 g Produkt
C4:0 (Buttersaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	% der ident. FAME
C6:0 (Capronsaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C6:0 (Capronsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C8:0 (Caprylsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C8:0 (Caprylsaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	% der ident. FAME
Cl0:0 (Caprinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	g/100 g Produkt
Cl0:0 (Caprinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident . FAME
Cl0:1(Decensaure)	ASU §64 LFGB L 13 .00-26 + -27/3	< 0,05	g/100 g Produkt
Cl0:1(Decensaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	% deridents. FAME
Cll:0 (Undecansaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	g/100 g Produkt
Cll:0 (Undecansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C12:0 (Laurinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C12:0 (Laurinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	% der ident. FAME
C12:1(9-Dodecansaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	g/100g Produkt
Cl2:1(9-Dodecansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C13:0 (Tridecansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100g Produkt
C13:0 (Tridecansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C14:0 iso (Isomyristinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	g/100 g Produkt
C14:0 iso (Isomyristinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	% der ident. FAME
C14:0 (Myristinsaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	g/100 g Produkt
C14:0 (Myristinsaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	0,07	% der ident. FAME
C14:1 trans (Myristelaidinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C14:1 trans (Myristelaidinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident . FAME
C14:ln5 (Myristoleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C14:ln5 (Myristoleinsaure)	ASU §64 LFGB L 13 .00- 26 +-27/3	<0,05	% der ident. FAME
C15:0 iso (13-M ethylmyristinsaure)	ASU §64 LFGB L 13.00 - 26 + - 27/ 3	<0,05	g/100 g Produkt
C15:0 iso (13-Methylmyristinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
Cl5:0 aiso (12-Methylmyristinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
Cl 5:0 aiso (12-Methylmyristinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
Cl5:0 (Pent adecansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
Cl 5:0 (Pentadecansaure)	ASU §64 LFGB L 13.00 - 26 + -27/3	< 0,05	% der ident. FAME
C15:ln5 (Pentadecensaure)	ASU §64 LFGB L 13.00-26 + - 27/3	< 0,05	g/100 g Produkt
Cl5:ln5 (Pentadecensaure)	ASU §64 LFGB L 13.00 -26 +-27/3	<0,05	% der id ent. FAME
Cl6:0 iso (Isopalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C16:0 iso (Isopalmitinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	% der ident. FAME
C16:0 (Palmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	3,97	g/100g Produkt
C16:0 (Palmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	6,47	% der ident. FAME
C16:l trans (Palmitelaidinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	g/100 g Produkt
C16:1 trans (Palmit elaidin saure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	% der id en t. FAME
Cl6:ln7 + Isome re (Palmitoleinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	0,08	g/100 g Produkt
C16:ln7 + Isomer e (Palmitoleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,13	% der ident. FAME
C17:0 iso (15-Methylpalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	g/ 100 g Produkt

)Food
Ein Unternehmen von SYN L /\ B\ /

www.food-jena.de
www.synlab.de

Test Report # F 08236 - 17L4

Document #.F2017-008236L4- 1

Parameter	Method	Results	Unit
C17:0 iso (15-Methylpalmitinsaure)	ASU §64 LFGB L 13 .00-26 + -27/3	< 0,05	% der ident. FAME
C16:2n4 (Hexadecadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C16:2n4 (Hexadecadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C17:0 aiso (14-Methylpalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C17:0 aiso (14-Methylpalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C16:3n4 (Hexadecatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C16:3n4 (Hexadecatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C17:0 (Margarinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C17:0 (Margarinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C16:4nl (Hexadecatetraensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C16:4nl (Hexadecatetraensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C17:ln7 (Heptadecensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C17:ln7 (Heptadecensaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	% der ident. FAME
C18:0 iso (Isostearinsaure)	ASU §64 LFGBL 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:0 iso (Isostearinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:0 (Stearinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	1,73	g/100 g Produkt
C18:0 (Stearinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	**2,82**	% der ident. FAME
C18:ln9 + Isomere (Olsaure + Isomere (Octadecensaure))	ASU §64 LFGB L 13.00-26 +-27/3	19,57	g/100 g Produkt
C18:ln9 + Isomere (Olsaure + Isomere (Octadecensaure))	ASU §64 LFGB L 13.00-26 +-27/3	**31,88**	% der ident. FAME
C18:ln7 (Vaccensaure)	ASU §64 LFGB L 13.00-26 + -27/3	**0,44**	g/100 g Produkt
C18:ln7 (Vaccensaure)	ASU §64 LFGB L 13.00-26 +-27/3	0,72	% der ident. FAME
C18:1Isomere	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C18:1Isomere	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:2n6 cis (Linolsaure)	ASU §64 LFGB L 13.00-26 + -27/3	34,54	g/100 g Produkt
C18:2n6 cis (Linolsaure)	ASU §64 LFGB L 13.00-26 +-27/3	56,26	% der ident. FAME
C18:3n6 (gamma -Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:3n6 (gamma -Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:3n4 (Octadecatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:3n4 (Octadecatriensaure)	ASU §64 LFGB L 13.00 -26 + -27/3	< 0,05	% der ident. FAME
C18:3n3 (alpha-Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:3n3 (alpha-Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:4n3 (Octadecatetraensaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	g/100 g Produkt
C18:4n3 (Octadecatetraensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
CLA-Isomer	ASU §64 LFGB L 13.00 -26 + -27/ 3	< 0,05	g/100 g Produkt
CLA-Isomer	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:0 (Arachinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,14	g/100 g Produkt
C20:0 (Arachinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,23	% der ident. FAME
C20:lnll (11-Eicosensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C20:lnll (11-Eicosensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:ln9 + Isomere (9-Eicosensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,11	g/100 g Produkt
C20:ln9 + Isomere (9-Eicosensaure)	ASU §64 LFGB L 13.00 -26 + -27/3	0,18	% der ident. FAME
C20:2n6 (n6-Eicosadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C20:2n6 (n6-Eicosadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	%der ident. FAME
C20:3n6 (Eicosatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt

1Food
Ein Unternehmen von SYNLAB

www.food-jena.de
www.synlab.de

Test Report # F08236 - 17L4

Document-#.F2017-008236L4- 1

Parameter	Method	Results	Unit
C20:3n6 (Eico sat ri ensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:4n6 (Arachidonsaur e)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C20:4n6 (Arachidonsaur e)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C21:0 (Hareicosansaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	g/100 g Produkt
C21:0 (Hareicosansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAM E
C20:3n3 (n3-Eicosat riensaure)	ASU §64 LFGB L 13 .00-26 +-27/3	<0,05	g/100 g Produkt
C20:3 n3 (n 3-Eicosat riensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:4n3 (n3-Eicosat etrae nsaur e)	ASU §64 LFGB L 13.00- 26 + -27/3	< 0,05	g/100 g Produkt
C20:4n3 (n3-Eicosatet raensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAM E
C20:5n3 (EPA - Eicosapent aen sau re)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C20:5n3 (EPA - Eicosapent aensau re)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:0 (Behensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,56	g/100 g Produkt
C22:0 (Behensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,92	% der ident. FAME
C22:l nll (Cet oleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C22:l nll (Cetolein saur e)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:l n9 (Eru casaur e)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C22:l n9 (Eru casaure)	ASU §64 LFGB L 13.00-26 + - 27/ 3	< 0,05	% der ident . FAME
C22:2n6 (Docosadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Pr odukt
C22:2n6 (Docosadien saure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:4n6 (Adrensaur e)	ASU §6 4 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C22:4n6 (Adrensaur e)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:5n3 (DPA - Doc osa penta ensaure)	ASU §64 LFGB L 13 .00-26 + -27/ 3	< 0,05	g/100 g Produkt
C22:5n 3 (DPA - Docosapentaensaure)	ASU §64 LFGBL 13.00-26 + -27/3	< 0,05	% der ident. FAM E
C22:6n 3 (DHA - Docosahexaensaur e)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C22:6n3 (DHA - Docosahexaensaur e)	ASU §64 LFGBL 13.00-26 + -27/3	< 0,05	% der ident. FAME
C24:0 (Lignocer in saur e)	ASU §64 LFGB L 13 .00 - 26 + -27/3	0,20	g/100 g Produkt
C24:0 (Lignocer insaur e)	ASU §64 LFGB L 13.00-26 + -27/ 3	0,32	% der ident . FAME
C24:l n 9 (Nervonsa ur e)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C24:l n9 (Nervonsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident . FAM E
gesatt igte Fett saur en	ASU §64 LFGB L 13.00-26 + -27/3	6,7	g/100 g Produkt
gesatt igt e Fett saur en	ASU §64 LFGB L 13.00-26 + -27/3	10,8	g/100 g Fett
einfach ungesatt igte Fett sauren	ASU §64 LFGB L 13.00-26 + -27/ 3	20,2	g/100 g Produkt
einfach ungesatt igte Fett sauren	ASU §64 LFGB L 13.00-26 + -27/3	32,9	g/100 g Fett
mehrfach ungesatt igt e Fet t sauren	ASU §64 LFGB L 13 .00-26 + -27/3	34,5	g/100 g Produkt
mehrfach ungesatt igte Fett sauren	ASU §64 LFGB L 13.00-26 + -27/3	56,3	g/100 g Fett

Heavy Metal Anslysis

Parameter	Method	Results	Unit
Sample preperation HNO3-pressure digestion	ASU § 64 LFGB L00.00 -19/1 und DIN EN 13805:2014-12	--	
Lead	DIN EN ISO 1 7294 (2005-02)	<0,01	mg/kg
Cadmium	DIN EN ISO 17294 (2005-02)	0,15	mg/kg
Mercury	DIN EN 15763	0,0033	mg/kg

1-Food
Ein Unternehmen von SYN LAB!

www.food-jena.de
www.synlab.de

Test Report #. F 08236 - 17L4
Document-Nr.F2017-008236L4- 1

Pesticide Analysis:I Multi-method

The analysis regarding pesticides included the substances listed in the attached list of active ingredients for pesticide screening with the limits of detection given therein (BG).

Parameter	Method	Result	Unit
Pesticide	QuEChERS DIN EN 15662, Bestimmung mit GC-MS/MS und LC-MS/MS	n.n.	

Note:
Rating:

Results comply with the maximum residue levels stipulated by Regulation (EC) 396/2005 and the residue limit Ordinance (RHmV)..

The Bundesverband Naturkost Naturwaren (BNN) recommends no more than a maximum of 0.01 mg/kg OS for pesticides for organic products..

These results meet without objection, taking analytical criteria for the named substances in appendix with a limit of 0.01 mg/kg OS..

These results meet without objection, taking analytical criteria for the named substances in appendix with a limit of 0.01 mg/kg OS..

Comment:

Test results relate exclusively to the listed samples. The partial reproduction of this report requires the written approval of Food GmbH. Unless otherwise noted, test reports are only valid with signature..

Avvreviations, symbols:

--: not determined / not applicable, (F): outsourcing to accredited laboratories, (N): non-accredited test procedure, BG: limit of quantification, FG: fresh weight, n.best .: not determined, na: not applicable, nn: not followed meadows, na: not available, OF: surface, OS: original substance, TM: dry matter, TS: dry matter; 1 '-. 1,: limit / warning level exceeded / fallen short of,? I: guidelines exceeded / fallen short of

Jena, on 15.05.2017

Dr. Mirko Ludwig
wissenschaftlicher Mitarbeiter
Arbeitsgruppe Instrumentelle Analytik

)Food
Ein Unternehrnen von SYN LAB\ /

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

{Page 1 of 3)

List of active substances for Pesticide Screening

Substance	Det.*:BG* [mg/kgOS*]	Substance	Det.*:BG* [mg/kgOS*]	Substance	Del. *:BG* [mg/kgOS*]	Substance	Det. *:BG* [mg/kgOS*]
1-NanhlvlacetamidNAD	LC:0,01	Biohenvl	GC:0,01	Chbrthioohos	GC: 0,01	Dichlorbenzoohenoo-4,4'	GC: 0,01
2,4,5-T	LC: 0,01	Bttertanol	LC: 0,01	Chbrtoluron	LC: 0,01	Dichlororoo 12 4-DPI	LC:0,01
2,4,5-TP	LC: 0,01	Bixafen	LC:0,01	Chbzolinat	GC:0,ot	Dichlorvos	GC: 0,01
2,4,6-TrichlOfphenol	LC:0,01	Boscalid	LC: 0,01	Chroma<enozid	LC:0,01	DielObutrazol	GC:0,01
2,4-D	LC:0,01	Bromacil	LC: 0,01	Cinidon-ethyi	LC:0,01	Diclobp, freie saure	LC: 0,01
2,4-DB	LC:0,01	Bromfenvinphos{-ethyl]	LC: 0,01	Cinosulfuron	LC: 0,01	Diclobp-methyl	GC: 0,01
2,4-Dimethvla In	LC:0,01	Bromocvclen	GC:0,01	Clethodim	LC:0,01	DiclOfan	GC: 0,01
2,6-DiehlOfbenzamid	LC:0,01	Bromophos f-methY11	GC:0,01	Climbazol	LC:0,01	Dicofol	GC:0,01
2-Phenylpheonl	GC:0,01	Bromophos-ethvl	GC:0,01	Clodinafoo	LC:0,01	Dierotophos	LC: 0,01
3,4-DiehlOCaniin	GC:0,01	Bromoxvnil	LC:0,01	Clodinafoo-orooarQY1	LC:0,01	Dieldrin	GC:0,01
3,5-DichlOfaniin	GC:0,01	Bromoxvniemethvlether	GC:0,01	Clofentezin	LC:0,01	Diethofencarb	LC: 0,01
3-Chloranilin	GC:0,01	Bromoroovlat	GC:0,01	ClOfnazon	LC:0,01	Dffenacoum	LC: 0,01
4-Chlorohenox-.siosilure	LC: 0,01	Bromuoonazol	LC:0,01	Cloouintocet	LC:0,01	Dffenoconazole	LC: 0,01
Aceohat	LC:0,01	Buoirirnate	LC:0,01	Cloouintocet-mexY1	LC: 0,01	Dffenoxuroo	LC:0,01
Acetamiorid	LC: 0,01	Buorofezin	LC: 0,01	Clothianidin	LC: 0,01	Dfflovidazin (Flufenzin)	LC:0,01
AcetochlOf	LC: 0,01	Butafenaci	LC: 0,01	Cournaohos	LC: 0,01	Diflubenzuron	LC:0,01
Aciftuorten	LC: 0,01	Butrai n	GC:0,01	Crimidin	LC:0,01	Diflufeni:an	GC: 0,01
Aclonifen	GC:0,01	Buturon	LC: 0,01	Cvanazn	LC: 0,01	Dimebx	LC: 0,01
Acrinathrin	GC:0,01	Cadusabs	LC:0,01	Cyanofenphos	GC: 0,01	Dimefuron	LC:0,01
Alachlor	LC:0,01	Cartiarvl	LC:0,01	**CvanoDhos**	GC: 0,01	DimethachlOf	LC: 0,01
Aldicarb	LC:0,01	Carbendazim	LC:0,01	CyazofamKl	LC: 0,01	Dimethenamid-o	LC: 0,01
Aldiearb-sulfon	LC: 0,01	Carbetamidle	LC:0,01	Cvclanild	LC: 0,01	Dimethioin	GC:0,01
Aldiearb-sulbxid	LC:0,01	Carbofuran	LC: 0,01	Cycloat	GC: 0,01	Dimethoat	LC: 0,01
Aldrin	GC:0,01	Carbofuran-3-hydroxy	LC:0,01	**Cycloxydim**	LC:0,01	Dimethomorph	GC: 0,01
Allethrin	GC:0,ot	Carbophenothionf-ethyl]	GC:0,01	Cyftufenamid	LC:0,01	Dimoxystrobin	LC: 0,01
Ametoctradin	LC: 0,01	Carbosuttan	LC: 0,01	Cyftuthrin (-beta)	GC: 0,01	Diniconazole	GC: 0,01
Ametrvn	LC: 0,01	Carboxin	LC: 0,01	Cvhalofoo-butvl	GC:0,01	Dinocao	LC: 0,01
Amidosulfuron	LC:0,01	Carfentrazon	LC:0,01	Cvhalothrio-Garrma	GC: 0,01	Dinoseb	LC: 0,01
Aminocarb	LC: 0,01	Carfentrazon-ethyl	LC:0,01	Cyhalothrin-Lambda	GC:0,01	Dinotefuran	LC:0,01
Amitraz	LC:0,01	Cartap	LC:0,01	Cvmoxanil	LC:0,01	Dinoterb	LC: 0,01
Aramite	LC:0,01	Chnomethionat	GC:0,01	Cvoermethrin	GC:0,01	Dioxacarb	LC: 0,01
Asulam	LC: 0,01	Chbranthraniiord	LC:0,01	Cvohenothrin	GC: 0,01	Dioxathion	LC: 0,01
Atrazn	LC:0,01	Chiorbensid	GC: 0,01	Cvorooonazole	LC: 0,01	Diphenamid	LC: 0,01
Atrazin-desethvf	L C: 0,01	Chbrbenzliat	GC:0,01	Cvorodini	GC: 0,01	Diphenvfamin	GC:0,01
Atrazin-desisooroovf	L C: 0,01	Chiorbromuron	LC: 0,01	**Cvromazn**	LC:0,01	Disulfoton	LC: 0,01
Avennectin Bia	LC: 0,01	Chbrbufam	LC: 0,01	Darrinozid	LC:0,01	Disulfotoo-Sulfon	LC:0,01
Avennectin B1b	LC: 0,01	Chiordao-cis	GC:0,01	DD0-0,0'	GC: 0,01	Disuflotoo-Sulbxid	LC: 0,01
Azaconazol	LC: 0,01	Chbrdao-oxv	GC:0,01	DDDo,o'	GC:0,01	Ditaimfos	LC: 0,01
Azimsulfuron	LC: 0,01	Chiordao-trans	GC:0,01	DDE-o,p'	GC:0,01	Dilhianon	LC: 0,01
AzinnMs-ethvl	LC:0,01	Chbrfenaovr	GC:0,01	DDE-o,o'	GC: 0,01	Diuron	LC:0,01
AzinOhos-methyl	GC:0,01	Chiorfenoroo-methyl	GC: 0,01	DDT-o,p'	GC: 0,01	DMST	LC:0,01
Aziprotryn	LC:0,01	Chbrfenson	GC:0,01	DDT-pp'	GC: 0,01	DNOC	LC: 0,01
Azoxystrobin	GC:0,01	Chiorfenvinphos	GC:0,01	DEET Diethyltoluamid	LC: 0,01	**Dodine**	LC: 0,01
Barban	LC: 0,01	Chbrfluazuron	LC: 0,01	Deltamethrin	GC: 0,01	Emamectin B1a	LC:0,01
BeflubutamKl	LC:0,01	Chioridazon	LC: 0,01	Demeton-S-methyl	LC: 0,01	Emamectin Bib	LC: 0,01
Benalaxyl	LC:0,01	Chbrmephos	GC:0,01	Demeton-S-methylsutton	LC:0,01	Endosuttan-alpha	GC: 0,01
Bendbcarb	LC:0,01	Chioroneb	GC:0,01	Demeton-S-methylsuttoxid	LC: 0,01	Endosuttan-beta	GC: 0,01
Benfluraln	GC: 0,01	Chbroxuron	LC: 0,01	Desmedioham	LC:0,01	Endosuttan-suttat	LC:0,01
Benfuracarb	LC:0,01	ChiorOhacinon	LC: 0,01	Desmetrvn	LC: 0,01	Endrin	GC: 0,01
Benomvt	LC:0,01	ChbrnrMham	GC:0,01	Diafenthiuron	LC: 0,01	Endrin-Aidlehvd	GC:0,01
Bensutturon-melhyl	LC: 0,01	Chiorpropylat	GC: 0,01	Dialffos	GC: 0,01	EPN	GC:0,01
Bentazon	LC: 0,01	Chbrovrffos 1-ethvll	GC:0,01	Diallat	GC: 0,01	**Eooxieonazole**	GC: 0,01
Bentazon-6-OH	LC: 0,01	Chiorpyrffos-methyl	GC:0,01	Diazinon	LC: 0,01	EPTC	GC: 0,01
Bentazon-8-OH	LC: 0,01	Chbrsutturon	LC:0,01	Dibrnmbenzoohenoo-4,4'	GC: 0,01	Esfenvalerat	GC: 0,01
Benlhiavali:arb-isooropyl	LC: 0,01	Chiorthal-dimethyl	GC:0,01	Dieamba	LC: 0,01	Etaconazol	LC:0,01
Bffenazat	LC: 0,01	Chbrthaloni	GC:0,01	Dichlobenil	GC: 0,01	Ethametsutturoo-methyl	LC:0,01
Bffenox	GC: 0,01	Chiorthiamid	LC:0,01	Diehlofenlhion	GC: 0,01	Ethidirooron	LC: 0,01
Bffenthrn	GC:0,01	Chiorthion	GC: 0,01	DichlofluanKl	LC: 0,01	Ethiofencarb	LC: 0,01

1Food
Ein Unternehmen von SYN LAB

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 2 of 3)

List of active substances for Pesticide Screening							
Substance	Det. •:BG• [mg/kg OS•]	Substance	Det. •:BG• [mg/kg OS•]	Substance	Del.•:BG• [mg/kg OS•]	Substance	Del.•:BG• [mg/kg OS•]
Ethion	LC:0,01	Flufenoxuron	LC:0,01	Iodosutturon-methvt	LC:0,01	Metrafenone	LC: 0,01
Ethirimol	LC: 0,01	Flumetrain	GC:0,01	Ioxvnil	LC: 0,01	Metribuzin	GC: 0,01
Ethofumesat	LC:0,01	Flumioxazin	GC:0,01	Ioconazol	LC: 0,01	Metsutturon-methvt	LC:0,01
Ethofumesat-2-keto	GC:0,01	Fluometuron	LC:0,01	IorobenohOs	LC: 0,01	MevinohOs	LC:0,01
EthooroohOs	LC:0,01	Fluoicolid	LC:0,01	Iorodion	GC: 0,01	Milbemvcin A3	LC:0,01
Ethoxvauin	GC: 0,01	Funnvram	LC:0,01	Iorovaliearb	LC:0,01	MilbemvcinA4	LC: 0,01
Ethoxvsutturon	LC: 0,01	Fluoroalvcofen-ethvl	LC: 0,01	IsazoohOs	LC:0,01	Mirex	GC:0,01
Etofenprox	GC:0,01	Fluotrimazol	GC:0,01	Isocarbophos	GC: 0,01	MNBA; 4-Methaesulfonyl-2-nitrobenzoc acid	LC: 0,01
Etoxazol	GC:0,01	Fluoxastrobin	LC: 0,01	Isodrin	GC: 0,01	Molinat	GC:0,01
Etridiazole	GC:0,01	Flupyrsutturon-methvt	LC: 0,01	Isofenphos	GC: 0,01	Monocrotophos	LC: 0,01
Etrimfos	LC: 0,01	Fluauir.::onazole	LC: 0,01	Isofenphos-methvl	GC: 0,01	Monolinuron	LC: 0,01
Farooxadon	LC: 0,01	Flurochlordone	LC: 0,01	Isonmcarb	LC: 0,01	Monuron	LC: 0,01
Fenamidon	GC:0,01	Fluroxvovr	LC:0,01	Isoorothiolan	LC: 0,01	Mvcbbutanil	GC:0 ,01
FenamiohOs	LC: 0,01	Fluroxvnv-rmenM	LC:0,01	Isooroturon	LC: 0,01	Naorooamide	LC:0,01
FenamiohOs-sutton	LC:0,01	**Flurorimidol**	LC:0,01	Isoovrazam	LC:0,01	Neburon	LC:0,01
Fenamio0s-suttoxid	LC: 0,01	Flurtaroon	GC:0,01	Isoxaben	LC: 0,01	NiCOSutturon	LC: 0,01
Fenarimol	LC:0,01	Flusilazole	LC:0,01	Isoxaftutol	LC: 0,01	Nitenovram	LC:0,01
Fenazaauin	LC: 0,01	Fluthiacet-methvl	LC:0,01	Kresoxim-melhvl	GC: 0,01	Nitralin	GC: 0,01
Fenbuconazole	LC:0,01	Flutolanl	LC:0,01	Lenacil	LC: 0,01	Nitrofen	GC: 0,01
Fenbutatinoxid	LC:0,01	Flutriafol	LC: 0,01	Linuron	LC: 0,01	Nitrothal-isopropyl	GC: 0,01
Fenchlornhos	GC:0,01	Fluvainatet-au	GC:0,01	Lufenuron	LC 0,01	Norfurazon	LC:0,01
Fenchlorohos-oxon	GC:0,01	Fluxapyroxad	LC: 0,01	**Malaoxon**	GC:0,01	Novaluron	LC:0,01
Fenhexamid	LC:0,01	Folpet	GC: 0,01	Malathion	GC:0,01	Nuarirool	GC:0,01
Fenitrolhion	GC:0,01	Fono!Js	LC: 0,01	Mandipropamid	LC: 0,01	OmehtOat	LC:0,01
Fenobucarb	LC:0,01	Foramsutturon	LC:0,01	MCPA	LC:0,01	OMalin	LC:0,01
Fenoxaprop-ethyl	LC:0,01	Forchlortenuron	LC:0,01	MCPB	LC: 0,01	Oxadiarovl	LC: 0,01
Fenoxaprop-P	LC:0,01	Formetanat	LC:0,01	Mecarbam	GC: 0,01	Oxadiazon	LC: 0,01
Fenoxycarb	LC:0,01	Formothion	LC:0,01	Mecoproo (MCPP)	LC: 0,01	**Oxadixvl**	LC: 0,01
Fenocb nil	LC:0,01	Fosthiazat	LC:0,01	Mefenovr-dielhvl	LC:0,01	Oxamvt	LC: 0,01
Fenorooathrin	GC:0,01	Fuberidazole	LC:0,01	Meoaniovrim	LC: 0,01	Oxasufuron	LC: 0,01
Fenorooidin	LC:0,01	Furlaxvl	LC:0,01	Meoaniovim-hvdroxvorovt	LC:0,01	Qxvr.arboxin	LC: 0,01
Fenorooimoroh	LC:0,01	Furathiocarb	LC:0,01	Meoronil	LC: 0,01	Oxvfluorlen	GC:0,01
Fenovroximate	LC:0,01	Gibberilinsilure	LC:0,01	Meotvldinocao	LC:0,01	Paclobutrazol	LC:0,01
Fenson	GC:0,01	Habsulfuron-methvl	LC:0,01	Mesosutturon-methvl	LC: 0,01	Paracxon 1-elhvll	LC: 0,01
Fensuttothion	LC:0,01	Habxvfoo	LC:0,01	Mesotricn	LC: 0,01	Paracxon-methvl	LC: 0,01
Fenlhion	GC: 0,01	HabxvfoP-2-ethoxv-elhvl	GC:0,01	Metaflumizon	LC: 0,01	Parathion1-elhvll	GC: 0,01
Fenthion-oxon	LC:0,01	Habxvfop.R methvl	LC:0,01	Metalal<lli	GC: 0,01	Parathion-methvl	GC: 0,01
Fenthion-oxon-sutton	LC:0,01	Heotachlor	GC: 0,01	Metaklehvde	LC: 0,01	Pebulat	GC: 0,01
Fenthion-oxon-suttoxid	LC: 0,01	Heotachlorepoxid	GC:0,01	Metamitron	LC: 0,01	Penconazol	LC: 0,01
Fenthion-sutton	LC: 0,01	Heotenoohos	GC:0,01	**Metazachlor**	LC: 0,01	Pen= uron	LC: 0,01
Fenthion-suttoxid	LC: 0,01	Hexachbrbenzol	GC:0,01	Metconazole	LC: 0,01	Pendimelhailn	GC:0 ,01
Fenuron	LC: 0,01	Hexachbrcyclohexan-alpha	GC:0,01	Methabenzthiazuron	LC: 0,01	Penoxsulam	LC:0,01
Fenvalerat	GC:0,01	Hexachbrcvclohexan-beta	GC:0,01	Methacrnos	GC: 0,01	Pentachloraniln	GC:0 ,01
Fioronil	LC: 0,01	Hexachbrcyclohexan-delta	GC:0,01	Methamidcphos	GC: 0,01	Pentachloranisol	GC: 0,01
Fioronil-sutton	LC: 0,01	Hexachbrcvclohexan-aamma	GC:0,01	Methidathion	LC: 0,01	Pentachlorbenzen	GC: 0,01
Flampoo, freie Saure	LC:0,01	Hexaconazot	LC 0,01	Methiocarb	LC: 0,01	Penmethrin	GC: 0,01
Flamorop-isnnrnnvl	LC:0,01	Hexaflurooron	LC: 0,01	Methiocarb-sutton	LC: 0,01	Perthan	GC: 0,01
Flazasutturon	LC: 0,01	Hexazinon	LC:0,01	Methiocarb-suttoxid	LC: 0,01	Pelhoxamid	LC: 0,01
FloniCamid	LC: 0,01	Hexvthiazox	LC:0,01	**Methornvl**	LC: 0,01	Phenmedioham	LC: 0,01
Florasul.rn	LC: 0,01	Imazall	LC: 0,01	**Methoorene**	GC: 0,01	Phenothrin	GC:0,01
Fluaznop, freie Saure	LC: 0,01	Imazaroox	LC: 0,01	Methoprotryn	LC: 0,01	Phenthoat	GC: 0,01
Fluaznop-P-butvl	LC: 0,01	Imazaquin	LC: 0,01	Methoxychlor	GC: 0,01	Phorat	GC: 0,01
Fluazinam	LC: 0,01	Imazethapyr	LC: 0,01	Methoxyfenozid	LC: 0,01	PhOrat-oxon	GC: 0,01
Flubendamid	LC:0,01	Imazosulfuron	LC: 0,01	Metobrornuron	LC: 0,01	PhOrat-oxonsutton	LC: 0,01
Flucycbxuron	LC:0,01	Imiber.::onazol	LC:0,01	Metolachbr	LC: 0,01	PhOra-tsuflon	LC: 0,01
Flucvthrinat	GC:0,01	Imidacborid	LC: 0,01	Metolcarb	LC:0,01	Phosalone	GC: 0,01
Fludioxonil	LC: 0,01	Indoxacarb	LC:0,01	Metosutam	LC:0,01	PhOsfolan	LC: 0,01
Flufenacet	LC:0,01	Iodofenohos	GC:0,01	Metoxuron	LC: 0,01	Phosmet	GC:0,01

1Food
Ein Unternehmen von SYN L/\[3\ /

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 3 of 3)

List of active substances for Pesticide Screening							
Substance	Det.*:BG* [mg/kg OS*]	Substance	Det.*:BG* [mg/kg OS*]	Substance	Del.*:BG* [mg/kg OS*)	Substance	Det. *:BG* [mg/kg OS*)
Phnsnhamidon	LC:0,01	Pvridafol	LC:0,01	Telodrin Ilsobenzanl	GC: 0,01	Trietazin	LC: 0,01
Phoxim	LC:0,01	IPvridalvl	LC:0,01	Tembotrion	LC:0,01	Triftoxvstrobin	GC: 0,01
Phtalimid	GC:0,01	IPvridaohenthion	LC:0,01	TEPP	LC:0,01	Triftoxvsulfuron	LC:0,01
Pieloram	LC:0,01	IPvridat	LC:0,01	Teoraloxvdim	LC:0,01	Triflumizole	LC: 0,01
Pieolnafen	LC:0,01	IPvrifenox	LC:0,01	Terbacil	LC:0,01	Triflurruron	LC: 0,01
Pieoxystrobin	LC:0,01	Pvrimethanli	GC:0,01	Terbufos	GC: 0,01	Trifluralin	GC: 0,01
Pinoxa:len	LC:0,01	IPvriorox;i en	LC:0,0	Terbufos-suffon	LC: 0,01	Triflusulfuron-methvl	LC: 0,01
Piperonyt)utoxid	GC:0,01	IPyroxsulam	LC:0,0	Terbufos-suttoxid	LC: 0,01	Tril:>rin	LC: 0,01
Piri:nicarb	GC:0,01	Quinalphos	LC:0,01	Terbumeton	LC:0,01	Trinexaoac	LC: 0,01
Piri:niearb-<lesmethyl	GC:0,01	Ouinmerac	LC:0,01	Terbuthvla7in	LC:0,01	Triticonazo!	LC: 0,01
Piri:niearb-desmethvtformamido	LC:0,01	Quinoclamin	LC: 0,01	Terbuthylazin-desethyl	LC:0,01	Tritosulfuorn	LC:0,01
Piri:niPhos-ethvt	GC: 0,01	Ouinoxvten	GC:0,01	Terbutrvn	LC: 0,01	VamidothiOn	LC: 0,01
Piri:niPhos-methvt	GC: 0,01	Quintozen	GC:0,01	Tetrachlorvinohos	GC: 0,01	Vinclozolin	GC:0,01
Prirrisutturon-methyl	LC: 0,01	Quizalofop	LC: 0,01	Tetraconazol	GC: 0,01	Warfarin	LC: 0,01
Prochloraz	LC: 0,01	Quizalofoo-ethvt	LC: 0,01	Tetrad on	GC: 0,01	Zoxamid	LC: 0,01
Procymidon	GC:0,01	Ouizalofop-tefulYl	LC:0,01	Tetrahvdroohtal mid	GC: 0,01		
Profenofos	LC: 0,01	Resmethrin	LC:0,01	Tetramethrin	GC:0,01		
Prdl Jralin	GC:0,01	Rimsuffuron	LC:0,01	TFNA	LC: 0,01		
Profoxydim	LC: 0,01	Rotenone	LC:0,01	TFNG	LC:0,01		
Promecarb	LC: 0,01	S-421	GC:0,0	Thiabendazol	LC: 0,01		
Prometon	LC: 0,01	Sebuthvla7in	LC: 0,01	Thiacbor id	LC:0,01		
Prometryn	LC:0,01	Sethoxvdim	LC:0,01	Thiamethoxam	LC: 0,01		
Prooachlor	LC:0,01	Siafluofen	GC:0,01	Thiazafluron	LC:0,01		
Prooamocarb	LC:0,01	Sithiofam	LC:0,01	Thiencarbazon-methvt	LC: 0,01		
Prooanli	LC:0,01	Si:nazine	LC:0,01	Th ensuffuron-methvt	LC: 0,01		
Propaauizafop	LC:0,01	Simetryn	LC:0,01	ThiObencarb	LC: 0,01		
Prooaraite	LC:0,01	SoinosvnA	LC:0,01	Thiodicarb	LC: 0,01		
Propazin	LC:0,01	Spinosyn D	LC:0,01	ThiOfanox	GC:0,01		
ProoetanPhos	LC:0,01	Soirodicbfen	LC: 0,01	Thioanox-sfoxid	LC: 0,01		
Prooham	LC: 0,01	Soiromesifen	LC:0,01	ThiOohanat-methvt	LC:0,01		
Prooiconazol	GC:0,01	Soirotetramat	LC:0,01	Totclofos-methvt	GC: 0,01		
Propoxur	LC:0,0	Spirotetramat BYI08330<is-eno!	LC:0,01	Toffenpyrad	LC: 0,01		
Propoxycarbazon	LC:0,01	Spirotetramat BYI08330<is-keto-hvdroxv	LC:0,01	Tolytfluanid	GC: 0,01		
Propyzamid	LC: 0,01	SpirotetramatBYI08330-eno• lalvcosid	LC:0,01	Topramezon	LC: 0,01		
Proquinazid	LC: 0,01	SpirotetramatBYI08330-mono-hvdroxv	LC:0,01	Tralkoxydim	LC: 0,01		
Prosuffocarb	LC: 0,01	Soiroxarrin	LC:0,01	Triadimel:>n	LC:0,01		
Prosuffuron	LC:0,01	Sulcofuron	LC:0,01	Triadimenol	GC:0,01		
ProthiOconazo!-desthiO	LC: 0,01	Sulcotrion	LC:0,01	Tri-allate	GC:0,01		
ProthiOconazote	LC: 0,01	Suffometuron-meth;i	LC: 0,01	Triasulfuron	LC: 0,01		
Prothiofos	GC:0,01	Suttosulfuron	LC: 0,01	Triazamat	LC: 0,01		
Pvrnetrozin	LC: 0,01	Suttoteo	LC: 0,01	Triazoohos	LC: 0,01		
IPvraclostrobin	LC: 0,01	Sulpropllos	LC: 0,01	Triazoxid	LC: 0,01		
PvrafUfen-ethvt	LC:0,01	Tebix:onazot	GC:0,01	Tribenuron-methvt	LC: 0,01		
PvrazoPhos	LC:0,01	Tebufenozid	LC:0,01	Trichlorfon	LC:0,01		
IPvrethrine:Cinerin I & II	LC:0,01	Tebufenovrad	GC:0,01	Trichloronat	GC: 0,01		
Pvrethrine: Jasmolin I & II	LC:0,01	Tecnazen	GC:0,01	Triclnnvr	LC: 0,01		
Pvrethrine: Pvrethrin 1&11	LC:0,01	Teflubenzuron	LC:0,01	Tricvclazote	LC: 0,01	Version 05-2015·	
IPvridaben	LC:0,01	Tefluthrin	GC:0,01	Tridemornh	LC: 0,01	Stand 19.05.2015	

• Abkurzungen:
Del.:Detektionsmodul
GC:GC-MS/MS
LC: LC-MS/MS
BG: Bestmmungsgrenze
OS:Originalsubstanz

1-Food

Ein Unternehmen von SYNLAB

www.food-jena.de
www.synlab.de

SYNLAB Umweltinstitut GmbH Lebensmittelinstitut Jena Orlaweg 2, 07743 Jena

Kramerbrau Saaten und Ole GmbH
Ludwig -Hirschberger-Allee 11
85276 Pfaffenhofen a. d. Ilm
Deutschland

Fur Riickfragen:
Dr. Carsten Loser
wiss. Mitarb eit er
Arbeit sgruppe Ruckstand e und Ko nt aminanten
Tel.: 03641 / 30 96 - 350
Email: carsten.loeser@synlab.com

Test Report # **F 24790 -17**

111111111 111111111

Customer:	Kramerbrau Saaten und Ole GmbH Ludwig-Hirschberger-Allee 11, 85276 Pfaffenhofen a. d. Ilm
Sample Size:	1 Sample
Sample Type:	Food (lx)
Sampling:	Client , 12.12.2017
Received:	13.12.2017
Test Period:	13.12.2017 to 18.12.2017

Dear Ladies and Gentlemen,

We send you the test reports on the above mentioned order.

With kind regards,
Synlab Umw eltinstitut GmbH . Lebensmittelinstitut Jena

jfood
Ein Unternehmen von SYN LAG

www.food-jena.de
www.synlab.de

Test Report # F 24790 - 17LI

Document-Nr.F2017-024790 LI- 1

Page of1

Customer:	Kramerbrau Saaten und Ole GmbH Ludwig-Hirschberger-Allee 11, 85276 Pfaffenhofen a. d. Ilm	
Sample Size:	1 Sample	
Lab#.:	Ll	
Sample Type:	Food	
Labeling:	Sample Name:	Organic Sunflower Bio
	Batch #:	2531707
	Lot.:	871
Sampling:	Customer, 12.12.2017	
Shipped:	Courier	
Sample Received	13.12.2017	
Container:	Debasafe	
Temperature:	Ambient temp	
Test Period:	13.12.2017 - 18.12.2017	

Pesticide Analysis: Multi-method

The analysis regarding pesticides included the substances listed in the attached list of active ingredients for pesticide screening with the limits of detection given therein (BG).

Parameter	Method	Result	Unit
Pesticide	QuEChERS DIN EN 15662, Bestimmung mit GC-MS/MS und LC-MS/MS	n.n.	

Rating: Results comply with the maximum residue levels stipulated by Regulation (EC) 396/2005 and the residue limit Ordinance (RHmV).
The Bundesverband Naturkost Naturwaren (BNN) recommends no more than a maximum of 0.01 mg/kg OS for pesticides for organic products..

These results meet without objection, taking analytical criteria for the named substances in appendix with a limit of 0.01 mg/kg OS..

Comments: Test results relate exclusively to the listed samples. The partial reproduction of this report requires the written approval of Food GmbH. Unless otherwise noted, test reports are only valid with signature

Abbreviations, symbols : -- : not determined / not applicable, (F): outsourcing to accredited laboratories, (N): non-accredited test procedure, BG: limit of quantification, FG: fresh weight, n.best .: not determined, na: not applicable, nn: not followed meadows, na: not available, OF: surface, OS: original substance, TM: dry matter, TS: dry matter; 1 '-. 1,: limit / warning level exceeded / fallen short of,? I: guidelines exceeded / fallen short of

Jena, on 28.0 2.2018

Dr. Carst en Loser
wiss. Mitarb eiter
Arbeitsgruppe RUckstande und Kontaminanten

((DAkkS
DN ht h,
-...1oto twf UfiUI
QS. Ihr Prüfsystem für Lebensmittel.

jfood
Lutz Eckardt Mathieu Florean1. Rudy Zartman
eingetragen Im Handelsreg1ster des AmtsgerichtsStuttgart HRB 19391 USt Id-Nr. DE 195 993 312
UniCredit Bank AG Jena IBAN DE68 8302 0087 0004 1900 09 SWIFT HYVEDEMM463
www.food-jena.de

jfood
Ein Unternehmen von SYN LAB /

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 1 of 3)

List of active substances for Pesticide Screening

Substance	Det. •:BG• [mg/kg OS*]	Substance	Det. ': BG• [mg/kg OS*]	Substance	Det.•:BG• [mg/kg OS*]	Substance	Det.•:BG• [mg/kg OS*]
1-NaphtylacetamidNAO	LC:0,01	Biohenyt	GC:0,01	Chlorthioohos	GC:0,01	Dichlorbenzoohenon-4,4'	GC:0,01
2.4,5-T	LC: 0,01	Bttertanol	LC:0,01	Chlortoluron	LC: 0,01	Oichlornroo 12,4-DPI	LC:O,Q1
2.4,5-TP	LC: O,Q1	Bixafen	LC:0,01	Chlozolinat	GC:0,01	**Dichlorvos**	GC:0,01
2.46-TricHorohenol	LC:0,01	**Boscalid**	LC:0,01	Chromafenozi<l	LC: 0,01	Diclobutrazol	GC:0,01
2.4-D	LC:0,01	Bromacil	LC:0,01	Cinidon-ethY1	LC: 0,01	Diclofoo, freie saure	LC: 0,01
2.4-DB	LC: 0,01	Bromfen'linhosl-ethY1	LC:0,01	Cinosulfuron	LC: 0,01	DiclofoD-methvt	GC:0,01
2.4-Dimethvlanilin	LC: 0,01	Bromocvcien	GC:0,01	Clethodim	LC: 0,01	Dicloran	GC:0,01
2,6-Dichlorbenzamid	LC:0,01	Bromonoos r-methv11	GC:0,01	Climbazol	LC: 0,01	Dicofol	GC:O,Q1
2-PhenY1ohenol	GC:0,01	Bromoohos-ethvt	GC:0,01	Clodinafoo	LC: 0,01	Dicrotoohos	LC:0,01
3,4-Dichloraniin	GC:0,01	Bromoxvni	LC: 0,01	ClodinafoD-orooamvl	LC:0,01	Dieldrin	GC:0,01
3,5-Dichloranilin	GC:0,01	Bromoxvni methvlether	GC:0,01	Clofentezin	LC:0,01	Diethofencarb	LC: 0,01
3-Chloranilin	GC:0,01	BromoronlAAI	GC:0,01	Clomazon	LC:0,01	Difenacoum	LC:0,01
4-ChlorohenoxvessiQsaure	LC:0,01	Bromuconazol	LC: 0,01	Cloouintocet	LC:0,01	Dttenoconazole	LC: 0,01
Acephat	LC:0,01	Buoirimate	LC: 0,01	Cloouintocet-mexvt	LC: 0,01	Dttenoxuron	LC: 0,01
Acetamiorid	LC:0,01	Buorofezin	LC:0,01	Clothianidin	LC: 0,01	Dttlovidazin /Flufenzinl	LC: 0,01
Acetochlor	LC: 0,01	Butafenaci	LC: 0,01	Coumaohos	LC: 0,01	Diflubenzuron	LC:0,01
Acifluorfen	LC:0,01	Butralin	GC: 0,01	Crimidin	LC: 0,01	Diflufenican	GC:0,01
Aclonifen	GC:O,Q1	Buturon	LC:0,01	Cvanazin	LC: 0,01	Dimefox	LC: 0,01
Acrinathrin	GC:0,01	Cadusafos	LC: 0,01	Cvanofenphos	GC: 0,01	Dimefuron	LC: 0,01
Alachlor	LC:0,01	Carbal)'l	LC: 0,01	**Cyanophos**	GC:O,Q1	Dimethachlor	LC: 0,01
Aldicarb	LC:0,01	Carbendazim	LC: 0,01	Cvazofamid	LC:0,01	Dimethenamid-n	LC: 0,01
Aldicarb-sutton	LC:0,01	Carbetamide	LC:0,01	Cvctanilid	LC:0,01	Dimethinin	GC:0,01
Aldicarb-suttoxid	LC:0,01	Carbofuran	LC:O,Q1	Cycloat	GC: 0,01	Dimethoat	LC:O,Q1
Aldrin	GC: 0,01	Carbofuran-3-hvdroxv	LC: 0,01	Cydoxydim	LC: 0,01	Dimethomorph	GC:0,01
Alethrin	GC: 0,01	Carboohenothion[-ethytJ	GC0,01	Cyflufenamid	LC:0,01	Dimoxvstrobin	LC: 0,01
Ametoctradin	LC:0,01	Carbosuttan	LC: 0,01	Cv1luthrin (-beta)	GC:0,01	Diniconazole	GC: 0,01
Ametrvn	LC:0,01	Carboxin	LC: 0,01	CvhalofOD-butvl	GC:0,01	Dinocao	LC:0,01
Amidosutturon	LC: 0,01	Carfentrazon	LC:O,Q1	Cvhalothrin-Gamma	GC:0,01	Dinoseb	LC: 0,01
Aminocarb	LC: 0,01	Carfentrazon-ethyi	LC: 0,01	Cvhalothrin-Lambda	GC: 0,01	Dinotefuran	LC:0,01
Amitraz	LC: 0,01	Cartao	LC: 0,01	CVTMxanil	LC: 0,01	Dinoterb	LC:0,01
Aramite	LC:O,Q1	Chinomethionat	GC:O,Q1	Cvnonnethrin	GC: 0,01	Dioxacarb	LC:0,01
Asulam	LC: 0,01	Chloratnhraniliorol	LC:0,01	Cvohenothrin	GC: 0,01	Dioxathion	LC: 0,01
Atrazin	LC: 0,01	Chlorbensid	GC:0,01	Cvoroconazole	LC: 0,01	Diohenamid	LC: 0,01
Atrazin-<fesethvt	LC:O,Q1	Chlorbenzilat	GC:0,01	Cvorodinil	GC:0,01	Diohenvtamin	GC:0,01
Atrazin-desisooroo, I	LC: 0,01	Chlorbromuron	LC: 0,01	Cyromazin	LC: 0,01	Disuttoton	LC: 0,01
Avennectin 81a	LC: 0,01	Chlorbufam	LC: 0,01	Daminozid	LC: 0,01	Disulfoton-Sulfon	LC: 0,01
Avermectin 81b	LC: 0,01	Chlordan-cis	GC:0,01	DDD-c,p'	GC: 0,01	DisulfotonSuttoxid	LC: 0,01
Azaconazol	LC: 0,01	Chlordan-oxv	GC:0,01	DDD-o,o'	GC:0,01	Ditalimfos	LC: 0,01
Azimsutturon	LC: 0,01	Chlordan-trans	GC:0,01	DDE-o,o'	GC:0,01	Dilhianon	LC: 0,01
Azinohos-ethvt	LC: 0,01	Chlorfenaovr	GC:0,01	DDE-o,o'	GC:0,01	Diuron	LC: 0,01
Azinphos-methvl	GC:0,01	ChlorfenoroD-methyl	GC:0,01	DDT-o,o'	GC:0,01	DMST	LC:0,01
Aziprotrvn	LC:0,01	Chlorfenson	GC:0,01	DDT-o,o'	GC:0,01	DNOC	LC: 0,01
Azoxystrobin	GC:0,01	Chlorfen'linphos	GC:0,01	DEET Diethvltoluamid	LC:0,01	**Dodine**	LC: 0,01
Barban	LC: 0,01	Chlorfluazuron	LC: 0,01	Deltamethrin	GC:0,01	Emamectin 81a	LC:0,01
Beflubutamid	LC:0,01	Chloridazon	LC: 0,01	Demeton-S-methvt	LC:0,01	Emamectin B1b	LC: 0,01
Benalaxyl	LC:0,01	Chlonneohos	GC:0,01	Demeton-S-methvtsutton	LC:0,01	Endosulfan-alnha	GC:0,01
Bendiocarb	LC:0,01	Chloroneb	GC:0,01	Demeton-S-methyisulfoxid	LC: 0,01	Endosulfan-beta	GC:0,01
Benfluralin	GC:0,01	Chloroxuron	LC: 0,01	Desmedipham	LC: 0,01	Endosuttan-suttat	LC:O,Q1
Benfuracarb	LC:0,01	Chlorohacinon	LC:0,01	Desmetrvn	LC:O,Q1	Endrin	GC:0,01
Benomvt	LC: 0,01	Chlororooham	GC:0,01	Diafenthiuron	LC: 0,01	Endrin-Aldehyd	GC: 0,01
Bensutturon-methyi	LC: 0,01	Chlorornnvlat	GC:0,01	Dial os	GC:0,01	EPN	GC: 0,01
Bentazon	LC:0,01	Chlorpyr os 1-elhyil	GC:0,01	Dialat	GC:0,01	Eooxiconazole	GC: 0,01
Bentazon-6-0H	LC: 0,01	Chlorpyrifos-methyl	GC:0,01	Diazinon	LC:0,01	EPTC	GC: 0,01
Bentazon-8-0H	LC: 0,01	Chlorsutturon	LC: 0,01	Dibrobenzoohenon-4,4	GC: 0,01	Esfenvalerat	GC: 0,01
Benthiavalcarb-isopropyt	LC: 0,01	Chlortal-dimethyl	GC: 0,01	Dicamba	LC: 0,01	Etaconazol	LC:0,01
Bifenazat	LC: 0,01	Chlorthalonil	GC:O,Q1	Dichlobenil	GC: 0,01	Ethametsutturon-methvt	LC: 0,01
Bttenox	GC: 0,01	Chlorthiamid	LC:0,01	Dichlofenthion	GC:0,01	Ethidimuron	LC: 0,01
Bttenthrin	GC:0,01	Chlorthion	GC: O,Q1	Dichlofluanid	LC: 0,01	Ethiofencarb	LC: 0,01

)Food
Ein Unternehmen von SYN L/\ B\ /

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

List of active substances for Pesticide Screening

Substance	Del.*: BG* [mg/kg OS*]	Substance	Del.*:BG* [mg/kg OS*]	Substance nz	Del. *:BG* [mg/kg OS']	Substance	Del.*: BG* [mgkgOS*]
Ethion	LC: 0,01	Flufenoxuron	LC:0,01	Iodosutturon-methvl	LC:0,01	Metrafenone	LC:0,01
Ethirimol	LC: 0,01	Flumetralin	GC:0,01	loxvnil	LC:0,01	**Metribuzin**	GC:0,01
Ethofumesat	LC: 0,01	Flumioxazin	GC:0,01	lnr.onazol	LC:0,01	Metsutturon-methvl	LC:0,01
Ethofumesat-2-keto	GC:0,01	Fluometuron	LC: 0,01	lorobenohos	LC:0,01	Mevinohos	LC: 0,01
Ethooroohos	LC: 0,01	Fluooicnlid	LC:0,01	lorodion	GC: 0,01	Milbemvcin A3	LC: 0,01
Ethoxl'Quin	GC:0,Q1	Fluoovram	LC:0,01	lorovalicarb	LC: 0,01	Milbemvcin A4	LC:0,Q1
Ethoxvsu ron	LC:0,Q1	Fluorootvoofen-ethvt	LC:0,01	Isazoohos	LC: 0,01	Mirex	GC:0,01
Etofenpox	GC:0,01	Fluotrimazol	GC:0,01	Isocarbophos	GC: 0,01	**MNBA;** 4-Methanesuttoynl-2-nitrobenzoic **acid**	LC: 0,01
Eto xazol	GC: 0,01	Fluoxastrobin	LC:0,01	Isodrin	GC: 0,01	Molinat	GC: 0,01
Etridiazole	GC:0,Q1	Flupysutturon-methyl	LC:0,01	Isofenphos	GC:0,01	Monocrotoohos	LC: 0,01
Etrimfos	LC: 0,01	FIUQuinoonazole	LC:0,01	Isofenohos-methvl	GC: 0,01	Monolinuron	LC: 0,01
Famoxadon	LC: 0,01	Flurochloridone	LC: 0,01	Isoorocarb	LC: 0,01	Monuron	LC:0,01
Fenamidon	GC: 0,01	Fluroxvovr	LC: 0,01	Isoorothiolan	LC: 0,01	Mvclobutanil	GC:0,01
Fenamiohos	LC: 0,01	Fluroxvovr-meotvt	LC: 0,01	Isooroturon	LC:0,01	Naorooamide	LC:0,01
Fenamiphos-sulfon	LC: 0,01	Fluorinidol	LC: 0,01	Isoovrazam	LC:0,01	Neburon	LC:0,01
Fenamoihos-sulfoxid	LC: 0,01	Flurtamon	GC:0,01	Isoxaben	LC:0,Q1	Nicosu ron	LC:0,01
Fenarimol	LC: 0,01	Flusilazole	LC: 0,01	Isoxaflutol	LC: 0,01	Nitenovram	LC: 0,01
FenazaQuin	LC:0,01	Fluthaicet-methyl	LC: 0,01	Kresoxim-methvl	GC:0,01	Nitralin	GC:0,01
Fenbuconazole	LC:0,01	Flutolanil	LC:0,01	Lenacil	LC:0,0	Nitrofen	GC: 0,01
Fenbutatinoxid	LC:0,01	Flutriafol	LC: 0,01	Linuron	LC: 0,01	NitrothaJ.isooroovt	GC:0,01
Fenchlorohos	GC:0,01	Fluvalinate-tau	GC:0,01	Lufenuron	LC:0,01	Norflurazon	LC: 0,01
Fenchlorohos-oxo	GC:0,01	Fluxaoyroxad	LC: 0,01	**Malaoxon**	GC:0,01	Novaulron	LC: 0,01
Fenhexamid	LC: 0,01	Foloet	GC:0,01	Malathion	GC:0,01	Nuarimol	GC:0,01
Fenitrothion	GC:0,01	Fonofos	LC:0,01	Mandiorooamid	LC:0,01	Omethoat	LC: 0,01
Fenobucarb	LC:0,01	Foramsulfuron	LC:0,01	MCPA	LC:0,01	()nnaJin	LC:0,Q1
FenoxaprOJrethyl	LC:0,01	Forchlorfenuron	LC:0,01	MCPB	LC:0,01	**Oxadiarovl**	LC: 0,01
Fenoxaprop-P	LC:0,01	Fonmetanat	LC:0,01	Mecarbam	GC:0,01	Oxadiazon	LC: 0,01
Fenoxycarb	LC:0,01	Formothion	LC: 0,01	Mecooroo /MCPPI	LC:0,Q1	**Oxadixvl**	LC:0,01
Fenpiclonil	LC:0,01	Fosthiazat	LC:0,01	Mefenovr-diethvt	LC: 0,01	**Oxarnvt**	LC:0,01
Fenpropathrin	GC: 0,01	**Fuberidazole**	LC:0,01	Mepanipyrim	LC:0,01	Oxasutturon	LC:0,01
Fenpropidin	LC:0,01	Furalaxvl	LC:0,01	Mepanipynm-hVdroxypropyJ	LC: 0,01	Oxycarboxin	LC:0,01
Fenpropimorph	LC:0,01	Furathiocarb	LC: 0,01	**MeP1onli**	LC:0,01	Oxyfluorfen	GC:0,Q1
Fenpyroximate	LC:0,01	GibberilinsAure	LC: 0,01	**Meptvldinocap**	LC: 0,01	Paclobutrazol	LC:0,01
Fenson	GC: 0,01	Halosu ron-methyl	LC:0,01	Mesosutturon-methyl	LC:0,01	Paraoxon 1-ettwll	LC:0,01
Fensulfothion	LC:0,01	Haloxvtoo	LC:0,01	Mesotrion	LC:0,01	Paraoxon-methvl	LC:0,01
Fenthion	GC:0,01	Haloxvlon-2-ethoxv-ethvl	GC:0,01	Metaflumizon	LC:0,01	Parathion r-elhvtl	GC:0,01
Fenthion-oxon	LC: 0,01	Haloxvtop-R methyl	LC: 0,01	**Metalaxvl**	GC: 0,01	Paralhion-methvt	GC:0,01
Fenthion-oxon-sulfon	LC: 0,01	Heptachlor	GC: 0,01	MetaldehVde	LC: 0,01	Pebulat	GC:0,01
Fenthion-oxon-suttoxid	LC: 0,01	Heptachloreooxid	GC: 0,01	Metamitron	LC: 0,01	Penoonazol	LC: 0,01
Fenthion-sulfon	LC: 0,01	Heptenophos	GC: 0,01	**Metazachlor**	LC: 0,01	Pencvruron	LC: 0,01
Fenthion-sulfoxid	LC: 0,01	Hexachlorbenzol	GC:0,01	Metconazole	LC: 0,01	Pendimethalin	GC:0,01
Fenuron	LC: 0,01	Hexachlorcvclohexan-aloha	GC:0,01	Melhabenzthiazuron	LC:0,01	Penoxsulam	LC:0,01
Fenvalerat	GC:0,01	**Hexachlorcvclohexan-beta**	GC:0,01	Methacrifos	GC:0,01	Pentachloranilin	GC: 0,01
Fioronil	LC: 0,01	Hexachlorcvdohexan-delta	GC:0,01	Methamidoohos	GC:0,01	Pentachloranisol	GC:0,01
Fioronli-sulfon	LC: 0,01	Hexachlorcvclohexan-aamma	GC:0,01	Methidalhion	LC: 0,01	Pentachlorbenzen	GC:0,01
Flampropf,reie saure	LC:0,01	Hexaconazol	LC: 0,01	Methiocarb	LC: 0,01	Permethrin	GC:0,01
Flamprop.isopropyl	LC: 0,01	Hexaflumuron	LC: 0,01	Methiocarb-sulfon	LC: 0,01	Perthan	GC:0,01
Flazasutturon	LC:0,01	Hexazinon	LC: 0,01	Methiocarb-sulfoxid	LC: 0,01	Pethoxamid	LC: 0,01
Flonicamid	LC: 0,01	Hexythiazox	LC: 0,01	Melhomyl	LC: 0,01	Phenmedinham	LC: 0,01
Florasulam	LC:0,01	Imazalil	LC:0,01	Melhoorene	GC:0,01	Phenothrin	GC:0,01
Fluaz op, freie Sliure	LC:0,01	Imazamox	LC: 0,01	Melhoorotrvn	LC: 0,01	Phenthoat	GC:0,01
Fluaz op-P-butyJ	LC:0,01	ImazaQuin	LC: 0,01	**Melhoxvchlor**	GC:0,01	Phorat	GC:0,01
Fluazinam	LC:0,01	Imazethaovr	LC:0,01	**Melhoxvtenozid**	LC: 0,01	Phorat-oxon	GC: 0,01
Flubendi id	LC: 0,01	Imazosufluron	LC: 0,01	Metobromuron	LC:0,01	Phorat-oxonsutton	LC:0,0
Flucvcloxuron	LC:0,01	Imibenoonazol	LC: 0,01	Metolachlor	LC:0,0	Phorat-sutton	LC: 0,01
Flucythrinat	GC:0,01	Imidacloorid	LC: 0,01	Metolcarb	LC:0,01	**Phosalone**	GC:0,Q1
Fludioxonil	LC: 0,01	Indoxacarb	LC: 0,01	Metosulam	LC: 0,01	Phosfolan	LC: 0,01
Flufenacet	LC:0,01	Iodofenphos	GC:0,Q1	Metoxruon	LC: 0,01	Phosmet	GC: 0,01

)Food
Ein Unternehmen von SYNLAG\/

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

{Page 3 of 3}

List of active substances in Pesticide Screening							
Substance	Det.*:BG* [mg/kg OS*]	Substance	Det.*:BG* [mg/kg OS*]	Substance	Det.*:BG* [mg/kg OS*]	Substance	Det. *:BG* [mg/kg OS*]
Phosphamidon	LC:0,01	IPyridafol	LC:0,01	Telodrin IIsobenzanI	GC:0,01	Trietazin	LC: 0,01
Phoxim	LC: 0,01	**IPyridaM**	LC:0,01	Tembotrion	LC:0,01	Tri!loxvstrobin	GC:0,01
Phtalimid	GC:0,01	IPyridaohenthion	LC:0,01	TEPP	LC:0,01	Tri!loxvsutturon	LC:0,Q1
Picloram	LC:0,01	**IPyridat**	LC: 0,01	Teoraloxvdim	LC:0,01	Triflumizole	LC: 0,01
Picolinafen	LC: 0,01	**Pvrifenox**	LC: 0,01	Terbacil	LC:0,01	Triflumuron	LC: 0,01
Picoxvstrobin	LC: 0,01	PYrimethanil	GC:0,01	Terbufos	GC:0,01	Trifluralin	GC: 0,01
Pinoxaden	LC:0,01	Pvrioroxvten	LC: 0,01	Terbufos-sutton	LC:0,01	Tri11us u tturon-methv1	LC:0,0
Pioeronvlbutoxid	GC: 0,01	Pvroxsulam	LC: 0,01	Terbufos-suttoxid	LC:0,01	Trfforin	LC:0,01
Pirimicarb	GC:0,01	Quinalohos	LC: 0,01	Terbumeton	LC:0,01	Trinexaoac	LC:0,01
Pirimicarb-oesmethvl	GC:0,01	Quinmerac	LC: 0,01	Terbuthvwin	LC:0,01	Triticonazol	LC: 0,01
Pirimicarl>-desmethylformamido	LC: 0,01	Oulnoclamin	LC: 0,01	Terbuthytazin-desethy1	LC:0,01	Trttosulfuron	LC: 0,01
Pirimiphos-ethyl	GC:0,Q1	Quinoxvten	GC:0,01	Terbutrvn	LC:0,01	Vamidolhion	LC: 0,01
Pirimiphos-methil	GC: 0,01	Quintozen	GC: 0,01	Tetrachlorvinohos	GC:0,01	Vinclozoin	GC:0,01
Primisutturon-melhy1	LC: 0,01	**Quizalofoo**	LC:0,01	Tetraconazol	GC:0,01	Wartarin	LC: 0,01
Prochloraz	LC:0,01	Quizalofop-ethyl	LC:0,01	Tetradffon	GC: 0,01	Zoxamid	LC: 0,01
Procvmidon	GC: 0,01	Quizalofoo-tefury!	LC:0,01	Tetrahydrophtatimid	GC:0,01		
Profenofos	LC: 0,01	Resmethrin	LC:0,01	Tetramethrin	GC:0,01		
Profluralin	GC: 0,01	Rimsutturon	LC: 0,01	TFNA	LC:0,01		
Profoxydim	LC:0,01	Rotenone	LC: 0,01	TFNG	LC:0,01		
Promecarb	LC:0,01	S-421	GC:0,01	Thiabendazol	LC:0,01		
Prometon	LC:0,01	Sebuthvwin	LC: 0,01	Thiacloprid	LC:0,01		
Prometryn	LC: 0,01	Sethoxvnim	LC: 0,01	Thiamethoxam	LC:0,01		
Propachlor	LC:0,01	Silafluofen	GC:0,01	Thiazafluron	LC:0,01		
Propamocarb	LC:0,01	Silthiofam	LC:0,01	Thiencarbazon-melhvl	LC: 0,01		
Propani	LC:0,01	Simazine	LC:0,01	Thifensutturon-melhvl	LC:0,01		
Propaquizafoo	LC:0,01	Simelrin	LC: 0,01	Thiobencarb	LC:0,01		
Prooaroite	LC:0,01	Soinosvn A	LC: 0,01	Thiodicarb	LC:0,Q1		
Proeazin	LC:0,01	Soinosvn D	LC: 0,01	Thiofanox	GC:0,01		
Propetamnhns	LC: 0,01	Soirodiclofen	LC:0,01	Thiofanox-suttoxid	LC: 0,01		
Propham	LC:0,01	Spiromesifen	LC: 0,01	Thioolanat-methvl	LC:0,01		
Propiconazol	GC:0,01	Spirotetramat	LC: 0,01	Tolclofos-methvl	GC: 0,01		
Propoxur	LC: 0,01	Spirotetramat BYI08330-cis-enol	LC: 0,01	Tolfenpyad	LC:0,01		
Propoxycarbazon	LC: 0,01	Spirotetramat BYI08330-cis-keto-hvdroxv	LC:0,01	Tolytfluanid	GC:0,01		
Propyzamid	LC: 0,01	Spirotetramat BYI08330-enol alvcosid	LC:0,01	Topramezon	LC: 0,01		
Proquinazid	LC: 0,01	SpirotetramatBYI08330-mono-hydroxy	LC: 0,01	Tralkoxydim	LC: 0,01		
Prosuttocarb	LC:0,01	Siiroxamin	LC: 0,01	Triadimefon	LC: 0,01		
Prosutturon	LC:0,01	Suloofuron	LC: 0,01	Triadimenol	GC:0,01		
Prothioconazo esthio	LC:0,01	Sulcotrion	LC: 0,01	Tri-alate	GC:0,01		
Prothioconazole	LC:0,01	Suttometuron-methyt	LC:0,01	Triasutturon	LC: 0,01		
Prothiofos	GC:0,01	Suttosutturon	LC:0,01	Triazamat	LC: 0,01		
I Pymetrozin	LC:0,01	Suttotep	LC:0,01	Triazoohos	LC: 0,01		
I Pyraclostrobin	LC: 0,01	Suloroohos	LC: 0,01	Triazoxid	LC: 0,01		
Pyraflufen-eth,I	LC: 0,01	Tebuconazol	GC:0,01	Tribenuron-melh,I	LC: 0,01		
Pyrazoohos	LC: 0,01	Tebufenozid	LC: 0,01	Trichlorfon	LC:0,01		
IPyrethrineCinerin I & II	LC: 0,01	Tebufenvrad	GC: 0,01	Trichloronat	GC: 0,01		
Pyrethrine: Jasmoiln I & II	LC: 0,01	Tecnazen	GC: 0,Q1	Triclopvr	LC: 0,01		
,Pyrethrin:ePyrethrin1&11	LC: 0,01	Teflubenzuron	LC: 0,01	Tricvclazole	LC:0,Q1	Version 05-2015;	
jPyridaben	LC: 0,01	Tefluthrin	GC: 0,01	Tridemoroh	LC: 0,01	Stand 19.05.2015	

• AbkGrzungen:
Det.: Detektionsmodul
GC: GC-MS/MS
LC: LC-MS/MS
BG: Bestimmungsgrenze
OS:Originalsubsatnz

Food
Ein Unternehmen von SYNLAB

www.food-jena.de
www.synlab.de

Food GmbH Jena Analytik • Consulting . Orlaweg 2. 07743 Jena

Kramerbrau Saaten und Ole GmbH
Eberstettener StraBe 14
85276 Pfaffenhofen/Ilm
Deutschland

Fiir Riickfragen:
Dr. Mirko Ludwig
wissenschaftlicher Mita rbeiter
Arbeitsgruppe Instrumentelle Analytik
Tel.: 03641 / 30 96 - 320

Test Report # **F 01224 - 17**

Customer:	Kramerbrau Saaten und Ole GmbH Eberstettener StraBe 14, 85276 Pfaffenhofen/Ilm
Sample Size:	1 Sample
Sample Type:	Food (lx)
Sampling :	Client, 19.01.2017
Received:	20.01.2017
Test Period :	20.01.2017 to 30.01.2017

Dear Ladies and Gentlemen,

We send you the test reports on the above mentioned order.

With kind regards,
Food GmbH Jena Analytik - Consult ing

Food
Ein Unternehmen von SYNLAB

www.food-jena.de
www.synlab.de

Test Report # F 01224 - 17L1
Document-Nr.F2017001224LI - 0

Custmer:	Kramerbrau Saaten und Ole GmbH Eberstettener Stra8e 14, 85276 Pfaffenhofen/Ilm	
Sample size:	1Sample	
Lab-#.:	Food	
Sample type::		
Labeling::	Sample name:	Organic Sunflower
	Batch-Nr.:	seeds2391410
	Lot.:	369
Sampling:	Customer	
Shipped:	, 19.01.2017 Courier	
Sample receipt:	20.01.2017	
Container:	Debasafe	
Temperature:	Ambient temp	
Condition:	Perfect	
Test Period:	20.01.2017- 30.01.2017	

Chemical-physical Analysis

Parameter	Method	Result	Unit
Oil content	Extraction with hexane fron the raw seed,ISOR659-1998	60,50	%0S

Chemical-physical Analysis

Parameter	Method	Result	Unit
Acid Value I	ASU §64 LFGB L 13.00-5; DIN EN ISO 660:2009	0,43	mgKOH/g Fett
Free Fatty Acids {FFA)	bere Calculated on the basis of average molecular mass of Oleic Acid (282 g/mol	0,22	%

Chemical-physical Analysis

Parameter	Methode	Ergebnis	Einheit
C4:0 (Butyric acid)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C4:0 (Butyric acid)	ASU §64 LFGB L 13.00-26 + - 27/3	< 0,05	% der ident. FAME
C6:0 (Caproic acid)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	g/100 g Produkt
C6:0 { Caproic acid)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C8:0 { Caproic acid)	ASU §64 LFGB L13.00-26 + -27/3	< 0,05	g/100 g Produkt
C8:0 (Caproic acid)	ASU §64 LFGB L13.00-26+ -27/3	< 0,05	% der ident. FAME
ClO:O (Caproic acid)	ASU §64 LFGB L13.00-26+ -27/3	< 0,05	g/100 g Produkt
ClO:O (Caproic acid)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
Cl0:1(Decenoic acid)	ASU §64 LFGB L 13.00-26+ -27/3	< 0,05	g/100 g Produkt
Cl0:1(Decenoic acid)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME

Food
Handelsregister Amtsgericht Jena HRS 206771 Ust-Id-Nr DE 190431111 | Geschäftsführer Dr Bernd Giese Thomas Petzold
Bankverbindung: Unicredit Bank AG Jena IBAN DE68 8302 0087 0004 190009 SWIFT HYVEDEMM465
Sparkasse Jena IBAN DE77 8305 3030 0000 0334 64 SWIFT HELADEF1JEN
www.food-jena.de

Food
Ein Unternehmen von SYN L/\ B\ /

www.food-jena.de
www.synlab.de

Test Report #. F 01224 - 17LI

Document-Nr.F2017-001224L-I0

Parameter	Methode	Ergebnis	Einheit
CII:0 (Undecanoic acid)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
CII:O (Undecanoic acid)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C12:0 (Lauric acid)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C12:0 (Lauric acid)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	% der ident. FAME
C12:1 (9-Deodecane)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C12:1 (9-Dodecane)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	%der ident. FAME
C13:0 (Tridecylic acid)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C13:0 (Tridecylic acid))	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	% der ident. FAME
C14:0 iso (Isomyristinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C14:0 iso (Isomyristinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	%der ident. FAME
C14:0 (Myristic)	ASU §64 LFGB L 13.00-26 +-27/3	0,06	g/100 g Produkt
C14:0 (Myristic)	ASU §64 LFGB L 13.00-26 +-27/3	0,10	%de r ident. FAME
C14:1trans (Myristelaidinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	g/100 g Produkt
C14:1 trans (Myristelaidinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	%der ident. FAME
C14:ln5 (Myristoleinsaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	g/100 g Produkt
C14:ln5 (Myristoleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	%der ident. FAME
C15:0 iso (13-Methylmyristinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C15:0 iso (13-Methylmyristinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	%de r ident. FAME
C15:0 aiso (12-Methylmyristinsaure)	ASU §64 LFGB L 13.00 - 26 + - 27/ 3	< 0,05	g/100 g Produkt
C15:0 aiso (12-Methylmyristinsaure)	ASU §64 LFGB L 13.00 - 26 + - 27/ 3	< 0,05	%de r ident . FAME
C15:0 {Pentadecansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C15:0 {Pentadecansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	%de r ident . FAME
C15:ln5 (Pentadecen saure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C15:ln5 {Pentadecensaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	%der ident. FAME
C16:0 iso {Isopalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C16:0 iso {Isopalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	%de r ident. FAME
C16:0 (Palmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	3,99	g/100 g Produkt
C16:0 (Palmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	6,59	%de r ident. FAME
C16:1 trans {Palmitelaidinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C16:1 trans {Palmitelaidinsaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	% der ident. FAME
C16:ln7 + Isomere {Palmitoleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,07	g/100 g Produkt
C16:ln7 + Isomere (Palmitoleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,12	% der ident. FAME
C17:0 iso (15-Methylpalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C17:0 iso (15-Methylpalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident . FAME
C16:2n4 {Hexadecadiensaure)	ASU §64 LFGB L 13.00 - 26 + - 27/ 3	< 0,05	g/100 g Produkt
C16:2n4 (Hexadecadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C17:0 aiso (14-Methylpalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
CI7:0 aiso (14-Methylpalmitinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C16:3n4 (Hexadecatriensaure)	ASU §64 LFGB L 13.00 - 26 + - 27/ 3	< 0,05	g/100 g Produkt
C16:3n4 (Hexadecatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	% der ident. FAME
C17:0 {Margarinsaure)	ASU §64 LFGBL 13.00-26 + -27/3	<0,05	g/100 g Produkt
C17:0 (Margarinsaure)	ASU §64 LFGB L 13.00 -26 + - 27/ 3	< 0,05	% der id e nt. FAME
C16:4nl (Hexadecatetraensaure)	ASU §64 LFGB L 13.00 - 26 + - 27/ 3	<0,05	g/100 g Produkt
C16:4nl (Hexadecatetraensaure)	ASU §64 LFGBL 13.00-26 + - 27/3	< 0,05	% der ident. FAME

Food
Ein Unternehmen von SYNLAB
www.food-jena.de
www.synlab.de

Test Report #.. F 01224 - 17LI

Document-Nr.F2017-001224LI- O

Parameter	Methode	Ergebnis	Einheit
C17:ln7 (Heptadecensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C17:ln7 (Heptadecensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:0 iso (Isostearinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:0 iso (Isostearinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:0 {Stearinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	2,25	g/100 g Produkt
C18:0 (Stearinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	3,71	%der ident. FAME
C18:ln9 + lsomere {Olsaure + lsomere (Octadecensaure))	ASU §64 LFGB L 13.00-26 + -27/3	21,49	g/100 g Produkt
C18:ln9 + lsomere {Olsaure + lsomere (Octadecensaure))	ASU §64 LFGB L 13.00-26 + -27/3	35,52	% der ident. FAME
C18:ln7 (Vaccensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,36	g/100 g Produkt
C18:ln7 (Vaccensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,60	% der ident. FAME
C18:1 lsomere	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	g/100 g Produkt
C18:1 lsomere	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:2n6 cis (Linolsaure)	ASU §64 LFGB L 13.00-26 + -27/3	**31,44**	g/100 g Produkt
C18:2n6 cis (Linolsaure)	ASU §64 LFGB L 13.00-26 + -27/3	51,96	% der ident. FAME
C18:3n6 (gamma-Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:3n6 (gamma-Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:3n4 {Octadecatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:3n4 (Octadecatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:3n3 (alpha-Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C18:3n3 (alpha-Linolensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C18:4n3 (Octadecatetraensaure)	ASU §64 LFGB L 13.00 -26 + -27/ 3	< 0,05	g/100 g Produkt
C18:4n3 (Octadecatetraensaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	% der ident. FAME
CLA - lsomer	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
CLA - lsomer	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident . FAME
C20:0 (Arachinsaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	0,15	g/100 g Produkt
C20:0 (Arachinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,24	% der ident. FAME
C20:lnll (11-Eicosensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C20:lnll (11-Eicosensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:ln9 + lsomere (9-Eicosensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,09	g/100 g Produkt
C20:ln9 + lsomere (9-Eicosensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,15	% der ident. FAM E
C20:2n6 (n 6-Eicosadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C20:2n6 (n6-Eicosadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:3n6 (Eicosatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100g Produkt
C20:3n6 (Eicosatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:4n6 (Arachidonsaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	g/100g Produkt
C20:4n6 (Arachidonsaure)	ASU §64 LFGB L 13.00-26 +-27/3	< 0,05	% der ident. FAME
C21:0 (Hareicosansaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C21:0 (Hareicosansaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	% der ident . FAME
C20:3n3 (n3 -Eicosat riensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C20:3n3 (n3-Eicosatriensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,0 5	% der ident. FAME
C20:4n3 (n3-Eicosatetraensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C20:4n3 (n3-Eicosatetraensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C20:5n3 (EPA - Eicosapentaensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt

Food
Ein Unternehmen von SYNLAB
www.food-jena.de
www.synlab.de

Test Report #. F 01224 - 17LI

Document-Nr.F2017-001224LI- 0

Parameter	Methode	Ergebnis	Einheit
C20:5n3 (EPA - Eicosapentaensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:0 (Behensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,48	g/100 g Produkt
C22:0 (Behensaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,79	% der ide nt. FAME
C22:lnll (Cetoleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C22:lnll (Cetoleinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:ln9 (Erucasaure)	ASU §64 LFGB L 13.00-26 +-27/3	<0,05	g/100 g Produkt
C22:ln9 (Erucasaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:2n6 (Docosadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C22:2n6 (Docosadiensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C22:4n6 (Adrensaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C22:4n6 (Adrensaure)	ASU §64 LFGB L 13.00-26 + -27/ 3	< 0,05	% der ident. FAME
C22:5n3 (DPA - Docosapentaensaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C22:5n3 (DPA - Docosapentaensaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	% der ident. FAME
C22:6n3 (DHA - Docosahexaensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	g/100 g Produkt
C22:6n3 (DHA - Docosahexaensaure)	ASU §64 LFGB L 13.00-26 + -27/3	< 0,05	% der ident. FAME
C24:0 (Lignocerinsaure)	ASU §64 LFGBL 13.00-26 + -27/3	0,13	g/100 g Produkt
C24:0 (Lignocerinsaure)	ASU §64 LFGB L 13.00-26 + -27/3	0,22	% der ident. FAME
C24:ln9 (Nervonsaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	g/100 g Produkt
C24:ln9 (Nervonsaure)	ASU §64 LFGB L 13.00-26 + -27/3	<0,05	% der ident. FAME
gesattigte Fettsauren	ASU §64 LFGB L 13.00-26 + -27/3	7,1	g/100 g Produkt
gesattigte Fettsauren	ASU §64 LFGB L 13.00-26 + -27/3	11,7	g/100 g Fett
einfach ungesattigte Fettsauren	ASU §64 LFGBL 13.00-26 + -27/3	22,0	g/100 g Produkt
einfach ungesattigte Fettsauren	ASU §64 LFGBL 13.00-26 + -27/3	36,4	g/100 g Fett
mehrfach ungesattigte Fettsauren	ASU §64 LFGB L 13.00-26 +-27/3	31,4	g/100 g Produkt
mehrfach ungesattigte Fettsauren	ASU §64 LFGB L 13.00-26 + -27/ 3	52,0	g/100 g Fett

Heavy Metal Analysis

Parameter	Method	Result	Unit
Sample preperation HNO3-pressure digestion	ASU § 64 LFGB L00.00-19/1 und DIN EN 13805:2014-12	--	
Mercury	DIN EN 15763 (2010-04)	<0,002	mg/kg
Lead	DIN EN ISO 17294 (2005-02)	<0,01	mg/kg
Cadmium	DIN EN ISO 17294 (2005-02)	0,15	mg/kg

Pesticide Analysis:I Multi-method

The analysis regarding pesticides included the substances listed in the attached list of active ingredients for pesticide screening with the limits of detection given therein (BG).

Parameter	Method	Result	Unit
Pesticide	QuEChERS DIN EN 15662, Defined with GC-M S/ MS und LC-MS/MS	n.n.	

Food
Ein Unternehmen von SYNLAB

www.food-jena.de
www.synlab.de

Test Report #.. F01224 - 17LI

Document-Nr.F2017-001224II- 0

Pesticide Analysis: Single Method

Parameter	Method	Result	Unit
Glyphosat	Food PA 541, LC-MS/MS	<0,01	mg/kg
AMPA	Food PA 541, LC-MS/MS	<0,01	mg/kg
Glufosinat	Food PA 541, LC-MS/MS	<0,01	mg/kg

Rating:

Results comply with the maximum residue levels stipulated by Regulation (EC) 396/2005 and the residue limit Ordinance (RHmV).

The Bundesverband Naturkost Naturwaren (BNN) recommends no more than a maximum of 0.01 mg/kg OS for pesticides for organic products..

These results meet without objection, taking analytical criteria for the named substances in appendix with a limit of 0.01 mg/kg OS..

Comments:

Test results relate exclusively to the listed samples. The partial reproduction of this report requires the written approval of Food GmbH. Unless otherwise noted, test reports are only valid with signature..

Abbreviations, symbols:

--: not determined / not applicable, (F): outsourcing to accredited laboratories, (N): non-accredited test procedure, BG: limit of quantification, FG: fresh weight, n.best .: not determined, na: not applicable, nn: not followed meadows, na: not available, OF: surface, OS: original substance, TM: dry matter, TS: dry matter; 1 '-. 1,: limit / warning level exceeded / fallen short of,? I: guidelines exceeded / fallen short of

Jena, on 30.01.2017

tC::l
wissenschaftlicher Mitarbe iter

Arbeitsgruppelnstrument elle Analytik

1-Food
Ein Unternehmen van SYN L /\ [3\ /

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 1 of 3)

List of active substances for Pesticide Screening							
Substance	Del.•: BG• [mg/kgOS*]	Substance	Det.•: BG• [mg/kgOS*]	Substance	Del.•: BG• [mg/kgOS*]	Substance	Del.•: BG• [mg/kgOS*]
1-Naohtvlacetamid	NAD LC:0,01	Biohenvt	GC:0,01	Chbrthioohos	GC: 0,01	**Dichlorbenzoohenon-4,4'**	GC: 0,01
24 5-T	LC:0,01	B ertanol	LC:0,01	Chbrtoturon	LC: 0,01	Dichlororoo (24-DPI	LC: 0,01
2,4,5-TP	LC:0,01	Bixafen	LC:0,01	Chbzotinat	GC: 0,01	**Dichlorvos**	GC: 0,01
2,46-Trichlorohenot	LC:0,01	Boscali!	LC:0,01	Chromafenozid	LC: 0,01	Diclobutrazot	GC: 0,01
2,4-D	LC:0,01	Bromacil	LC:0,01	Cinidon-ethyt	LC:0,Q1	Diclofop, freie saure	LC: 0,01
2,4-DB	LC:0,01	BromfenvinphOs[-elhyt]	LC:0,01	Cinosutfuron	LC: 0,01	Diclobp-methyl	GC:0,01
2,4-Dimethvtanilil	LC:0,01	Bromocvclen	GC:0,01	Clethodim	LC: 0,Q1	Dicloran	GC:0,01
2,6-Dichlorbenzamid	LC:0,01	BromoohOs [-methyl]	GC:0,01	Climbazol	LC: 0,01	Dicofot	GC:0,01
2-Phenvtnhenol	GC:0.ot	BrornnnhOs-ethyl	GC:0,Q1	Clodinafop	LC:0,Q1	Dicrotophos	LC:0,01
3,4-Dichloraniln	GC:0,ot	Bromoxynil	LC: 0,01	Clodinafop-propargyl	LC:0,Q1	Dieldrin	GC:0,01
3,5-Dichloraniin	GC:0,01	Bromoxyni methylether	GC:0,01	Clofentezin	LC: 0,01	DiethOfencarb	LC:0,Q1
3-Chloranilin	GC:0,01	Brompropylat	GC:0,01	Clornazon	LC: 0,01	Dnenacoum	LC0,01
4-Chlornhenoxyessigsaure	LC:0,01	Broml>'.Xlnazot	LC:0,01	CloQuintocet	LC: 0,01	Dnenoconazole	LC0,01
Acellhat	LC:0,01	Buprimate	LC:0,01	CloQuintocet-mexyt	LC: 0,01	Dnenoxuron	LC: 0,01
Acetamiorid	LC:0,01	Buprofezn	LC: 0,01	Clothlaindn	LC:0,Q1	D vidazin(Flufenzin}	LC0,01
Acetochlor	LC:0,01	Butafenaci	LC: 0,01	CoumaphOs	LC: 0,01	Diflubenzuron	LC: 0,01
Acifluorfen	LC:0,01	Butrain	GC:0,01	Crimidil	LC:0,Q1	Diflufeni:an	GC:0,01
Aclonnen	GC:0,01	Buturon	LC:0,01	Cyanazil	LC: 0,01	Dimebx	LC:0,ot
Acrinathrin	GC:0,01	Cadusafos	LC:0,01	Cvanofenohos	GC: 0,01	Dimefuron	LC:0,Q1
Alachlor	LC:0,01	Carbarvl	LC: 0,01	Cvanool1os	GC: 0,01	Dimethachlor	LC0,01
Aldicarb	LC:0,01	Carbendazim	LC:0,01	Cvazofami!	LC: 0,01	Dimethenamid-p	LC:0,01
Aldicarb-sulfon	LC:0,01	Carbetamide	LC:0,01	evelanild	LC: 0,01	Dimethlpln	GC: 0,01
Aldicarb-sulbxid	LC:0,01	Carbofuran	LC:0,01	Cycloat	GC:0,01	Dimethoat	LC:0,Q1
Aldrin	GC:0,01	Carbofuran-3-hvdroxv	LC: 0,01	Cvcloxvdim	LC: 0,01	Dimethomoroh	GC: 0,01
Allethm	GC:0,01	Camnnhenothiont-ethvtl	GC:0.ot	Cvflufenamid	LC: 0,01	Dimoxystrobin	LC:0,01
Ametoctradin	LC:0,01	Carbosulfan	LC: 0,01	Cvfluthrin(-beta!	GC: 0,01	Diniconazote	GC:0,ot
Ametrvn	LC:0,01	Cart>oxin	LC: 0,01	Cyhalofop-butyt	GC:0,01	Dinocap	LC: 0,01
Amidosulfuron	LC:0,01	Carfentrazon	LC: 0,01	Cyhalothrin-Gamma	GC: 0,01	Dinoseb	LC:0,01
Aminocarb	LC:0,01	Carfentrazon-ethyt	LC:0,01	Cyhalothrin-Lambda	GC: 0,01	Dinotefuran	LC:0,01
Amitraz	LC:0,01	Cartao	LC: 0,01	Cymoxanil	LC: 0,01	Dinoterl>	LC:0,01
Aramite	LC:0,01	Chnomethionat	GC:0,01	Cvoermelhrin	GC: 0,01	Dioxacarb	LC:0,01
Asulam	LC:0,01	Chbranthranli rol	LC: 0,01	Cyphenolhrin	GC: 0,01	Dioxathion	LC:0,01
Atrazil	LC:0,01	Chlorbensid	GC:0,01	Cyprocooazole	LC: 0,01	Diphenamid	LC:0,01
Atrazin-desethvt	LC:0,01	Chbrbenzilat	GC:0,01	Cyprodini	GC: 0,01	Diphenytamin	GC: 0,01
Atrazil-desisooroovt	LC:0,01	Chlorbromuron	LC: 0,01	Cyromazil	LC: 0,01	DiSulbton	LC:0,01
Avennectin B1a	LC:0,01	Chlorbufam	LC: 0,01	Daminozid	LC:0,Q1	DiSulfoton-Sulfon	LC:0,01
Avennectin B1b	LC:0,01	Chlordan-cis	GC:0,01	DDEo,p'	GC:0,01	DiSulbton-Sulbxid	LC:0,01
Azaconazol	LC:0,01	Chlordan-oxv	GC:0,01	DDEp,p'	GC:0,01	Ditaimfos	LC:0,01
Azimsulfuron	LC:0,01	Chlordan-trans	GC:0,01	DDE-o,p'	GC:0,01	Dilhianon	LC:0,01
Azinohos-ethyl	LC:0,01	Chbrfenaovr	GC:0,01	DDE-,p'	GC:0,01	Diuron	LC: 0,01
Azinohos-melhvt	GC:0,01	Chbrfenproo-methvt	GC:0,01	DDTo,p'	GC:0,01	DMST	LC: 0,01
Aziorotrvn	LC:0,01	Chlorfenson	GC:0,01	DDTp,p'	GC:0,01	DNOC	LC: 0,01
Azoxvstrobin	GC:0,01	ChlorfenvinPhOS	GC:0,01	DEET Dielhvttoluamid	LC:0,01	**Dodine**	LC: 0,01
Barban	LC:0,01	Chlorfluazuron	LC: 0,01	Deltamethrin	GC: 0,01	Emamectin B1a	LC: 0,01
Beflubutamd	LC: 0,01	Chbridazon	LC: 0,01	Demeton-S-methyt	LC:0,Q1	Emamectin B1b	LC: 0,01
Benalaxvl	LC:0,01	Chlormeohos	GC:0,01	Demeton-S-methvtsulton	LC: 0,01	Endosultan-alpha	GC: 0,01
Bendiocarb	LC:0,01	Chbroneb	GC:0,01	Demeton-S-methylsultoxid	LC:0,01	Endosultan-beta	GC: 0,01
Benfluralin	GC:0,01	Chbroxuron	LC: 0,01	Desmedipham	LC:0,Q1	Endosultansulfat	LC: 0,01
Benfuracarb	LC:0,01	Chlorphacinon	LC:0,01	Desmetryn	LC:0,01	Endrin	GC:0,01
Benomvi	LC:0,01	Chlororooham	GC:0,01	Diafenthiuron	LC:0,Q1	Endrin-Aldehyd	GC:0,01
Bensulturon-methyt	LC:0,01	Chlororooytat	GC:0,01	Dialnos	GC:0,01	EPN	GC:0,01
Bentazon	LC:0,01	Chlorpyrifos 1-ethvtl	GC: 0,01	Diallat	GC:0,01	**Eooxicooazole**	GC 0,01
Bentazon-6-OH	LC:0,01	Chbrovrifos-melhvt	GC:0,01	Diazinon	LC:0,01	EPTC	GC:0,01
Bentazon-8-OH	LC:0,01	Chbrsulturon	LC:0,01	Dibrmbenzohenon-4,4'	GC:0,01	Esfenvalerat	GC:0,01
Benlhavalcarb-isooroovt	LC: 0,01	Chlorthat-dmi ethvl	GC:0,01	Dicamba	LC: 0,01	Etaconazol	LC:0,ot
Bnenvzat	LC: 0,01	Chbrthaloni	GC: 0,01	Dichlobenil	GC:0,01	Ethametsulturon-methyt	LC: 0,01
Bnenox	GC: 0,01	**Chlorthiamid**	LC:0,01	Dichlofenthlon	GC:0,ot	Elhidimuron	LC:0,ot
Bnetnhril	GC:0,01	Chbrthion	GC:0,01	Dichlofluanid	LC:0,Q1	Ethiofencarb	LC:0.01

lFood
Ein Unternehmen von SYNLJ\G\ /

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 2 of 3)

List of active substances for Pesticide Screening							
Substance	Del. •: BG• [mg/kg OS•1	**Substance**	**Del.•:BG• [mg/kgOS*]**	**Substance**	Del. •: BG• **[mg/kg OS*]**	**Substance**	Del.•: BG* [mg/kg OS•1
Elhion	LC: 0,01	Flufenoxuron	LC: 0,01	Iodosulfuron-methyt	LC: 0,01	Metrafenone	LC:0,Q1
Elhirimol	LC: 0,01	Flumetrain	GC:0,01	Ioxynil	LC: 0,01	Metlibuzin	GC: 0,01
Elhofumesat	LC:0,01	Flumioxazin	GC:0,01	Ioconazol	LC:0,Q1	Metsutturon-methyt	LC: 0,01
Elhofumesat-2-keto	GC:0,01	Fluometuron	LC:0,01	IorobenohOs	LC: 0,01	MevinphOs	LC:0,01
Elhcprcphos	LC:0,01	FluOPicolid	LC:0,01	Iprodion	GC: 0,01	Milbemvcin A3	LC: 0,01
Elhoxvauin	GC:0,01	Fluoovram	LC:0,01	Iorovalicarb	LC: 0,01	MilbemvcinA4	LC:0,01
Elhoxvsutturon	LC:0,01	Flu0<oolvcnfen-elhY1	LC:0,01	IsazOPhos	LC:0,Q1	Mirex	GC: 0,01
Etofenprox	GC:0,01	Fluotrimazol	GC:0,01	Isocarbaphos	GC:0,01	MNBA; 4-Methanesulfony1-2-nitrobenzoi:: acid	LC:0,01
Etoxazol	GC:0,01	Fluoxastrobin	LC:0,01	Isodrin	GC:0,01	Molina!	GC: 0,01
Etridiazote	GC:0,01	Flupyrsutturon-methyt	LC: 0,01	Isofenphos	GC:0,01	Monocrotophos	LC:0,01
Etrimfos	LC: 0,01	FluQuinconazote	LC: 0,01	IsofenDhos-methyt	GC: 0,01	Monolinuron	LC:0,01
Farooxadon	LC: 0,01	Flurochloridone	LC:0,01	Isoorocarb	LC: 0,01	Monuron	LC:0,01
Fenamidon	GC:0,01	Fluroxvavr	LC:0,01	Isoprothiolan	LC: 0,01	Mycbbutanil	GC:0,01
FenamphOs	LC: 0,01	Fluroxypyr-meptyt	LC: 0,01	Isooroturon	LC: 0,01	Naorcpamide	LC:0,01
Fenamphos-sutton	LC:0,01	Flurprimidol	LC: 0,01	Isoovrazam	LC: 0,01	Neburon	LC:0,01
FenamphOs-suttoxid	LC:0,01	Flurtaroon	GC:0,01	Isoxaben	LC: 0,01	Nieosutturon	LC:0,01
Fenarimol	LC: 0,01	Flusilazole	LC: 0,01	Isoxaflutol	LC: 0,01	Nitenorvam	LC: 0,01
Fenazaquin	LC: 0,01	Flulhacet-melhvl	LC: 0,01	Kresoxim-melhYl	GC:0,01	Nitrailn	GC: 0,01
Fenbuconazote	LC:0,01	Flutolani	LC: 0,01	Lenacil	LC: 0,01	Nitrofen	GC: 0,01
Fenbutatinoxid	LC:0,01	Flutriafol	LC: 0,01	Unuron	LC: 0,01	Nitrothal-isoprOPvl	GC: 0,01
Fenchlorohos	GC:0,01	Fluvainate-tau	GC:0,01	Lufenuron	LC: 0,01	Nor11urazon	LC: 0,01
Fenchlorohos-oxon	GC:0,01	Fluxaovroxad	LC: 0,01	Malaoxon	GC:0,01	Novaluron	LC: 0,01
Fenhexamid	LC:0,01	Foloet	GC:0,01	Malathion	GC:0,01	Nuairool	GC: 0,01
Fenitrothion	GC:0,01	Fonofos	LC: 0,01	Mandipropamid	LC:0,01	Omeht Oat	LC: 0,01
Fenobucarb	LC:0,01	F0<amsu uron	LC: 0,01	MCPA	LC: 0,01	Qrv»lin	LC: 0,01
Fenoxaoroo-ethyt	LC: 0,01	F0<Chlorfenuron	LC: 0,01	MCPB	LC:0,01	Oxadiargyt	LC: 0,01
Fenoxaoroo-P	LC:0,01	F0<metanat	LC: 0,01	Mecarbam	GC:0,01	Oxadiazon	LC: 0,01
Fenoxvcarb	LC: 0,01	F0<molhion	LC:0,01	Mecooroo (MCPP)	LC: 0,01	Oxadixyt	LC:0,01
Fenarbnil	LC:0,01	Fosthlazat	LC: 0,01	Mefenpyr-diethyt	LC:0,01	Oxamyt	LC: 0,01
Fenorooathrin	GC:0,01	Fuberidazote	LC:0,01	Mepanipyrin	LC: 0,01	Oxasulfuron	LC:0,01
Fenorooidin	LC:0,01	FuralaxYl	LC:0,01	Mepanipyrm-hydroxypropyt	LC:0,01	Oxvcarboxin	LC:0,01
FenoroPimornh	LC:0,01	Furathiocarb	LC:0,01	Meoronil	LC: 0,01	Qxyfluorfen	GC: 0,01
Fenovroximate	LC:0,01	Gibberilinsllure	LC: 0,01	Meptytdinocap	LC: 0,01	Paclobutrazot	LC: 0,01
Fenson	GC:0,01	Habsulfuron-methyt	LC: 0,01	Mesosu uron-methyt	LC: 0,01	Paraoxon1-elhYll	LC: 0,01
Fensuttothioo	LC:0,01	Habxyfop	LC: 0,01	Mesotlion	LC:0,Q1	Paraoxon-methyl	LC: 0,01
Fenthion	GC:0,01	Haklxyfop-2-ethoxy-ethyt	GC:0,01	Metaflurizon	LC: 0,01	Parathion1-elhvtl	GC: 0,01
Fenthion-oxon	LC:0,01	Haklxyfop-R methyl	LC:0,01	Metalaxvt	GC: 0,01	Parathion-methvl	GC:0,01
Fenthion-oxon-su on	LC: 0,01	Heptachlor	GC:0,01	Metaldehvde	LC: 0,01	Pebulat	GC: 0,01
Fenthion-oxon-suttoxid	LC:0,01	HeptachlorePOxid	GC:0,01	Metamtron	LC:0,Q1	Penconazol	LC: 0,01
Fenthion-sutton	LC:0,01	Heptenophos	GC:0,01	Metazachlor	LC: 0,01	Pencvcuron	LC: 0,01
Fenlhion-suttoxid	LC: 0,01	Hexachklrbenzol	GC:0,01	Metoonazote	LC: 0,01	Pendimeth in	GC: 0,01
Fenuron	LC: 0,01	Hexachbrcvclohexan-aloha	GC:0,01	Methabenzthlazuron	LC: 0,01	Penoxsulam	LC: 0,01
Fenvalerat	GC: 0,01	Hexachbrcvclohexan-beta	GC:0,01	Methacrifos	GC: 0,01	Pentachloraniiln	GC:0 ,01
Fioronil	LC: 0,01	Hexachkrcvclohexa-delta	GC:0,01	MelhamidoPhos	GC:0 ,01	Pentachloranisol	GC:0 ,01
Fipronil-su on	LC: 0,01	Hexachbrcvclohexan-aamma	GC:0,01	Methidathion	LC: 0,01	Pentachlorbenzen	GC:0 ,01
Flamoroo. freie Saure	LC: 0,01	Hexaconazot	LC: 0,01	Methiocarb	LC:0,01	Permelhrin	GC:0,01
Flamcoo-isoorMvt	LC: 0,01	Hexaflurooron	LC:0,Q1	Methiocarb-sutton	LC: 0,01	Perthan	GC: 0,01
Flazasutturon	LC:0,01	Hexazinon	LC:0,01	Methiocarb-suttoxid	LC:0,Q1	Pelhcamid	LC:0,01
Flonicamid	LC:0,01	Hexythiazox	LC:0,01	Melh0<0Y1	LC:0,Q1	PhenmediDham	LC:0,01
Florasulam	LC:0,01	Imazali	LC:0,01	MelhOPrene	GC: 0,01	Phenothrin	GC: 0,01
Fluazffop, freie Saure	LC:0,01	Imazamox	LC: 0,01	MelhOProtrvn	LC:0,01	Phenlhoat	GC: 0,01
Fluazffop-P-butyt	LC: 0,01	Imazoouin	LC: 0,01	Methoxvchlor	GC: 0,01	Phorat	GC: 0,01
Fluazinam	LC:0,01	Imazelhaovr	LC:0,01	Melhoxvfenozid	LC: 0,01	PhOrat-oxon	GC:0,01
Flubendiamid	LC: 0,01	Imazosulfuron	LC: 0,01	Metobr0<0uron	LC:0,01	Phorat-oxonsutton	LC: 0,01
Flucvcklxuron	LC: 0,01	Imibenconazot	LC:0,01	Metolachklr	LC: 0,01	PhOrat-sulfon	LC:0,Q1
Flucvthrinat	GC: 0,01	Imidacb0<id	LC:0,01	Metolcarb	LC: 0,01	Phosalone	GC: 0,01
Fludioxonil	LC: 0,01	Indoxacarb	LC:0,01	Metosulam	LC: 0,01	PhOsfotan	LC: 0,01
Flufenacet	LC: 0,01	Iodofenphos	GC:0,01	Metoxuron	LC: 0,01	Phosmet	GC: 0,01

jfood
Ein Unternehmen von SYN LAG /

www.food-jena.de
www.synlab.de

Pesticide screening in fruit, vegetables and cereals according to BNN guidelines

(Page 3 of 3)

List of active substances in Pesticide Screening							
Substance	**Det.*: BG* [mg/kgOS*]**	**Substance**	**Det.•: BG• [mg/kgOS*]**	**Substance**	**Del. *: BG• [mg/kg OS*)**	**Substance**	**Del.*:BG• [mg/kgOS*]**
Ph=harooon	LC:0,01	Pvridafol	LC:0,01	Telodri1(Isobenzanl	GC: 0,01	Trietazin	LC:0,01
Phoxim	LC:0,01	Pvridalvl	LC:0,01	TembotriOO	LC: 0,01	Tnnoxvstrobin	GC: 0,01
Phlalimid	GC:0,01	Pyridaphenthion	LC:0,01	TEPP	LC: 0,01	Triftoxysulfuron	LC:0,Q1
Picloram	LC:0,01	Pvridat	LC:0,01	Teoraloxvdim	LC: 0,01	Tnnurmole	LC:0,01
Picoinafen	LC:0,01	**Pyrifenox**	LC:0,01	Terbacil	LC: 0,01	Tnnumuron	LC:0,Q1
Picoxystrobi1	LC:0,01	Pyrimethanil	GC:0,01	Terbufos	GC: 0,01	Tnnurali1	GC: 0,01
Pinoxooen	LC:0,01	f'vripoxyfen	LC:0,01	Terbufos-su on	LC: 0,01	Tnnusulfuron-methyl	LC: 0,01
Piperonvt,U1oxid	GC:0,01	Pyroxsulam	LC:0,01	Terbufos-su oxid	LC: 0,01	Trifori1	LC: 0,01
Pirinicarb	GC:0,01	Qui1alphos	LC:0,01	Terbumeton	LC: 0,01	Trinexapac	LC: 0,01
Pirinicarb<Jesmethyl	GC:0,01	Qunmerac	LC:0 ,01	Terbuthylazin	LC: 0,01	Triticonazol	LC: 0,01
Pirinicarb-desmethvlfonmarooo	LC:0,01	Qui1oclamin	LC: 0,01	Terbuthylazin-desethyl	LC:0,Q1	Tritosulfuron	LC: 0,01
Piriniphos-ethyl	GC:0,01	Quinoxyfen	GC: 0,01	Terbutryn	LC:0,01	VamidothiOn	LC:0,01
Piriniohos-methvl	GC:0,01	Quintozen	GC: 0,01	Tetrachlorvinphos	GC:0,01	Vinclozolin	GC:0,01
Primisu uron-methyl	LC:0,01	Quizalofp	LC: 0,01	Tetraconazol	GC:0,01	Warfarin	LC:0,01
Prochlornz	LC: 0,01	Quizalofp-ethyl	LC: 0,01	Tetrooifon	GC:0,01	Zoxaroo	LC: 0,01
Procymidon	GC:0,01	Quizalofop-tefuryl	LC:0,01	Tetrahydrophtalimid	GC:0,01		
Profenofos	LC:0,Q1	Resmethnn	LC:0,01	Tetramethnn	GC: 0,01		
ProfkJralin	GC:001	Rimsu uron	LC:0,01	TFNA	LC:0,Q1		
Profox)'dim	LC:0,01	Rotenone	LC:0,01	TFNG	LC:0,Q1		
Promecarb	LC:0,01	S-421	GC:0,01	Thiabendazol	LC: 0,01		
Prometon	LC:0,01	SebU1hvlazin	LC:0,01	Thiacborid	LC: 0,01		
Prometrvn	LC: 0,01	Sethoxvdim	LC:0,01	Thiamelhoxam	LC:0,Q1		
Prooachlor	LC: 0,01	Siafluofen	GC:0,01	Thiazanuron	LC: 0,01		
Prooamocarb	LC:0,Q1	Si thiofam	LC:0,01	Thiencarbazon-methvl	LC: 0,01		
Prooanil	LC:0,01	Sinazine	LC: 0,01	Thifensu uron-methvl	LC:0,Q1		
Prnnaauizafoo	LC:0,01	Sinetrvn	LC:0,01	Thiobencarb	LC: 0,01		
Prooaroite	LC:0,01	Soinosvn A	LC:0,01	Thiodicarb	LC:0,Q1		
Prooazin	LC:0,01	Soinosvn D	LC:0,01	Thiofanox	GC:0,01		
Prnnotamohos	LC: 0,01	Soirodk:bfen	LC:0,01	Thiofanox-su oxid	LC:0,Q1		
Prooham	LC:0,01	Soiromesifen	LC:0,01	Thiochana-tmethvt	LC: 0,01		
Prooiconazol	GC:0,01	Soirotetramat	LC:0,01	Tolclofos-methvt	GC:0,Q1		
Propoxur	LC: 0,01	Spirotetramat BYI08330-ds-enol	LC:0,01	Tolfenpyrad	LC:0,01		
Propoxycarbazon	LC: 0,01	Spirotetramat BYI08330-<:is-keto-hvdroxv	LC:0,01	Tolylfluanid	GC: 0,01		
Propyzamid	LC:0,Q1	Spirotetramat BYI08330-eno glycosid	LC:0,01	Topramezon	LC:0,Q1		
Proquinazid	LC: 0,01	Spirotetramat BYI08330-mono-hvdroxv	LC: 0,01	Tralkoxydim	LC:0,01		
Prosu ocarb	LC: 0,01	Spiroxamin	LC:0,01	Triooimeron	LC: 0,01		
Prosu uron	LC:0,01	Suloofuron	LC:0,01	Triadimenol	GC: 0,01		
Prothioconazol-desthio	LC: 0,01	Sulootrion	LC:0,01	Tn-allate	GC: 0,01		
Prothioconazole	LC: 0,01	Su ometuron-methyl	LC:0,01	Triasulfuron	LC: 0,Q1		
Prothiofos	GC:0,01	Su osulfuron	LC:0,01	Triazamat	LC: 0,01		
Pymetrozin	LC:0,01	Su otep	LC:0,01	Triazoohos	LC: 0,01		
Pyraclostrobin	LC:0,01	Suloroohos	LC:0,01	Triazoxid	LC: 0,01		
PyrafkJfen-ethyl	LC:0,01	Tebuconazol	GC:0,01	Tribenuron-methvl	LC:0,Q1		
Pyrazophos	LC: 0,01	Tebufenozid	LC:0,01	Trichlorfon	LC: 0,01		
Pyrethrine: Cinerin I & II	LC: 0,01	Tebufenovrad	GC:001	Trichloronat	GC: 0,01		
Pvrethrine: Jasmolin I & II	LC: 0,01	Tecnazen	GC:0,01	Triclnnvr	LC: 0,01		
Pvrethrine: Pvrethri1 1&11	LC: 0,01	Tenubenzuron	LC:0,01	Tricvclazole	LC: 0,01	Version 05-2015;	
Pvridaben	LC: 0,01	Tenuthrin	GC: 0,01	Tridemoroh	LC: 0,01	Stand 19.05.2015	

• Abk0rzungen:
Del.:Detektionsroodul
GC:GC-MS/MS
LC:LC-MS/MS
BG: Bestinmungsgrenze
OS: Originalsubstanz

Subject: Afla-/Ochratoxine in Heliaflor® Products

- **Heliaflor® 45**
- **Heliaflor® 55**
- **Heliaflor® Crisps**

We (All Organic Treasures GmbH) hereby confirm that

We routinely analyze the aflatoxins in the raw material of our Heliaflor® sunflower protein, we do this several times in a year. While we only have ochratoxin analyzed through this same historical means, we do carry out a sensory test on receipt of all raw material. This also includes the water content, in order to exclude the possibility of errors in:

- harvesting
- drying
- further processing
- storage and transport (e.g. storage in excessively moist conditions)

To ensure that no mycotoxins are contained in the product, the crude sunflower protein will be tested for aflatoxins and ochratoxins as a new standard from today forward, and will be included in the certificate of analysis for each new production lot.

We find no detection of the following mycotoxins: Aflatoxin B1, Aflatoxin B2, Aflatoxin G1, Aflatoxin G2, and Ochratoxin A. The aflatoxins are tested at a threshold of 0.2 µg/kg with no detection, and the Ochratoxin A is tested at a threshold of 0.5 µg/kg with no detection.

Since all the above mentioned end products are produced from the crude sunflower protein, we can confidently declare that contamination can be excluded.

AOT Quality Assurance.
Established by computer, therefore no signature
Wiggensbach, September 30, 2020

CONSENSUS STATEMENT OF A GRAS PANEL ON THE SAFETY AND GENERALLY RECOGNIZED AS SAFE (GRAS) STATUS OF SUNFLOWER PROTEIN FOR USE IN FOOD

Introduction

An independent panel of experts (the GRAS Panel), qualified by scientific training and experience to evaluate the safety of food and food ingredients, was requested by Austrade, Inc. (Austrade) to determine the safety and Generally Recognized as Safe (GRAS) status of the use of sunflower protein as an ingredient for use in food for human consumption. The intended use of the sunflower protein is as a source of protein for enrichment of conventional foods, identical to the food use of other plant-derived proteins previously deemed to be GRAS and/or notified as GRAS to the U.S. FDA. The sunflower protein product is manufactured in accordance with current Good Manufacturing Practice (cGMP) and meets the proposed specifications.

A detailed review based on the existing scientific literature (through January 2020) on the safety of sunflower protein was conducted by ToxStrategies, Inc. (ToxStrategies) and is summarized in the attached dossier. The GRAS Panel members independently reviewed the dossier prepared by ToxStrategies and other pertinent information and convened on March 30, 2020 via teleconference. Based on their independent, critical evaluation of all of the available information and discussions during the March 30, 2020 teleconference, the GRAS Panel unanimously concluded that the intended uses described herein for Austrade's sunflower protein ingredient, meeting appropriate food-grade specifications as described in the supporting dossier (**GRAS Determination of Sunflower Protein for Use in Food**) and manufactured according to cGMP, is safe, suitable, and GRAS based on scientific procedures. A summary of the basis for the GRAS Panel's conclusion is provided below.

Summary and Basis for GRAS Determination

Description

The sunflower protein products are protein concentrates derived from *Helianthus annuus pepo* and include:

- Heliaflor® 45 Sunflower Protein
- Heliaflor® 55 Sunflower Protein
- Heliaflor® 55 Sunflower Protein Crisps.

Manufacturing Process

The sunflower protein products are derived from sunflower seeds that are mechanically cold-pressed for partial oil extraction. Mechanical pressing is used for partial oil extraction, followed by an optional supercritical CO_2 extraction step to further remove oil, and the sunflower protein end product is manufactured in compliance with good

manufacturing practices. The manufacturing process does not include the use of chemicals, enzymes, or solvents. The manufacturing process is performed in compliance with cGMP for food (21 CFR Part 110).

Sunflower seeds are received, tested, and approved for further processing. Testing includes physico-chemical properties, microbiological parameters, allergens (gluten and soya), heavy metals, aflatoxins, and pesticides. The approved sunflower seeds then go through a cleaning and conditioning step, and a mechanical-screw cold press is implemented for partial oil extraction. For Heliaflor 55 products, an additional supercritical CO_2 extraction process is used to further remove oil. The protein-rich sunflower press cake from either scenario described above moves through the process to be analyzed further and checked against product specifications. Press cake that meets positive release criteria for protein content is homogenized and dry milled in the presence of nitrogen and low temperatures in a fine-grinding step using a registered trademark technology known as Kryonert®. A Bactosafe kill-step process is used for microbial control; the process is a heat treatment lasting ½ to 3 minutes. For Heliaflor Sunflower Protein Crisps, the protein powder is processed further through an extruder to produce a textured form of the protein product. The product is then tested for foreign material through a magnet and sieving process. The final protein product goes through another analysis for nutritional content, allergens, and presence of mycotoxins and then is dispatched for storage and sale.

Analytical (chemical and microbiological) results for the sunflower protein product confirm that the finished product meets the proposed analytical specifications as demonstrated by the consistency of production, the lack of impurities and contaminants (e.g., heavy metals, pesticides, mycotoxins, polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans, and dioxin-like polychlorinated biphenyls), and its stability under accelerated stability conditions for up to 24 months. In addition, the manufacturing facility has an allergen management program in place to mitigate the potential for cross contamination, as mustard seed and gluten-containing grains may be present. Austrade, as part of their standard technical documentation, informs downstream customers of this to enable appropriate labeling of finished food products, if necessary.

Intended Use and Intake Assessment

Austrade proposes to use sunflower protein as a protein source for enrichment of conventional foods, identical to uses recognized previously in GRAS notifications (GRNs) for current plant-based protein sources. The typical uses of protein for enrichment of foods include bakery products; snack foods; breakfast cereals; ready-to-drink beverages; fats and oils; soups and nutritional beverages such as smoothies, high-protein drinks, and milkshakes; powdered nutritional/protein beverages; nutrition bars; vegetarian food products (such as pea crisps); meat analogues; dairy and imitation dairy products; and meal replacements/nutritional bars.

As is evident from the previously submitted GRNs, the proposed use concentrations and variety of food uses, combined with the average daily consumption of the described foods, results in a calculated daily intake of the protein ingredient being a substantial fraction of

the daily reference value (DRV) of 50 g/day (FDA, 2017), and the recommended dietary allowances (RDAs) of 46 grams/day for women over 19 years of age and 56 grams/day for men over 19 years (IOM, 2005). In addition, in some cases, the intake of total combined uses even exceeded these values at the 90th percentile consumption. However, the USDA (2015) Scientific Report of the 2015 Dietary Guidelines Advisory Committee reported that the 90th percentile intake of protein from food and beverages ranges from 89.0 to 132.9 g/day in adults age 19 years and older. Austrade's proposed sunflower protein ingredient is intended only to be an alternative source of protein for current uses in food. Therefore, a similar estimate of intake would be expected if sunflower protein were the only source of protein used in processed foods. As was concluded in the other GRAS notifications, it is not realistically expected that the actual consumption of foods containing sunflower protein would result in daily consumption greater than the DRV or RDA for protein. It is reasonable to expect that most of the population's intake of protein is, and will remain, in the form of unprocessed foods, including meat, poultry, fish, and legumes. The proposed uses of sunflower protein will not increase the overall consumption of protein, and simply will provide an alternative source of well-characterized protein from sunflower for use in food.

History of Use

Use of sunflower as a food crop dates back thousands of years, with evidence suggesting that the plant was cultivated from approximately 3,000 B.C. (Schneiter, 1997, as cited in National Sunflower Association, 2019). Flour produced by pounding sunflower seeds was used to make cakes, meal, and bread, and the seeds themselves were eaten as snacks, a practice that continues to the present day (Guo et al., 2017). Currently, sunflower is cultivated primarily for the seeds, which yield one of the world's most common sources of edible oil (CIR, 2016; Guo et al., 2017).

Sunflower seeds have also been used in some cultures as an important source of protein; they are reported to contain approximately 20–21 g protein/100g (Guo et al., 2017; National Sunflower Association, 2019; USDA, 2019). Many different plant-derived proteins provide essential amino acids and have been well established as an important source of added protein in conventional food. Current sources of added protein used in food include protein from beans, peas, grains, vegetables, and seeds (FDA, 2017). The proposed uses of sunflower protein in the current GRAS determination will not increase the overall consumption of total dietary protein, but will simply provide an alternative source of well-characterized protein from sunflower for use in food.

Extensive published information and data have been submitted to and reviewed by FDA as part of various GRNs for animal- and plant-based protein isolates and concentrates, all of which received "no objection" letters for their respective use(s) in food. As discussed above, the proposed uses of sunflower protein in the current GRAS determination will not increase the overall consumption of protein from any source, but simply will provide an alternative source of well-characterized protein from sunflower for use in food.

Safety Data

The intended use of the sunflower protein is as a source of protein for enrichment of processed foods, identical to food uses of other plant-derived proteins previously deemed as GRAS and/or notified as GRAS to the U.S. FDA. Sunflower and sunflower-derived products, including sunflower protein, have a long history of use in human food dating back thousands of years (CIR, 2016; Guo et al., 2017; National Sunflower Association, 2019). Extensive published information and data have been submitted to and reviewed by FDA as part of various GRNs for animal- and plant-based protein isolates and concentrates. Based on intake data submitted in previous GRNs for plant-derived proteins, the proposed uses result in calculated daily intakes of the protein additives being a substantial fraction of the DRV of 50 g/day (FDA, 2017) and RDA of 46 grams/day for women over 19 years of age, and 56 grams/day for men over 19 years of age (IOM, 2005).

Austrade's proposed sunflower protein ingredient is intended only to be an alternative source of protein for current protein uses in food. Therefore, a similar estimate of intake would be expected if this specific sunflower protein was the only source of protein used in conventional foods. The actual consumption of foods containing sunflower protein would not be expected to result in daily consumption greater than the DRV or RDA for protein and, most of the population's intake of protein would be expected to come from conventional foods including meat, poultry, fish, and legumes. The proposed uses of sunflower protein will not increase the overall consumption of protein but will simply provide an alternative source of well-characterized protein from sunflower for use in food.

The composition of Austrade's sunflower protein(s) is similar to that of other plant-based proteins that have been notified to the FDA as GRAS. As with the present GRAS determination, in most of the existing GRNs, data on the source materials were used to support the safe use of their respective proteins. In addition, where toxicological data were available, these were also used to support the safe use of plant-based proteins for use in human food. For example, several animal studies on canola proteins are summarized in GRNs 386 and 683, including 90-day dietary studies in rats and various mutagenicity studies. In addition, GRNs 788 and 608 reported the outcome of genotoxicity and subchronic toxicity studies on pea proteins. In addition, only minor differences are noted in relative amounts of essential and non-essential amino acids present in sunflower seed meal and sunflower protein. The proteins found in sunflower seed meal are the same as those found in the sunflower protein; the minor differences observed demonstrate that the amino acid profile of sunflower protein is generally maintained after processing and is similar to other plant-based proteins on the market. These findings support the conclusion that there is no safety concern in regard to the proposed sunflower protein product and its use in food.

Based on its composition (≥41% protein), the sunflower protein would not be expected to have toxicokinetic properties different from other sunflower- and plant-derived protein products that have already been determined to be GRAS for human consumption. Other constituents of sunflower seeds do not present any concerns related to safety and include unsaturated fats, fiber, vitamins, minerals, and antioxidants (CIR, 2016; Guo et al., 2017). Therefore, this protein product derived from *H. annuus* is not expected to present any concerns related to safety for human consumption. This conclusion is corroborated by

several *in vivo* studies in rats and mice in which no adverse effects were observed following consumption of sunflower proteins and hydrosylates for 48–90 days (Canistro et al., 2017; Hoernicke et al., 1988; Sautier et al., 1983). A subchronic oral toxicity study has been published by Hoernicke et al. (1988). In this study, the potential oral toxicity of five different sunflower proteins was evaluated in Shoe rats. One of the isolates (Variant A, containing 74.2% protein) was tested in a standard diet with 0, 25%, 50%, or 70% of the protein replaced by sunflower protein. The authors concluded that the highest dose, up to 13 g/kg-bw/day[1], was not associated with "any health impairment in 90-day test rats."

The potential for *H. annuus* and its derivatives, including sunflower protein, to cause sensitization and subsequent allergic reactions has been summarized in detail in review articles (Patel and Bahna, 2016). Based on these reviews, as well as other published data reviewed as part of the current GRAS determination, sunflower protein is not considered to be a concern with regard to sensitization and allergic reaction. However, as with any food product containing a potential allergen, it is proposed that ingredient labels for Austrade's sunflower protein clearly identify the source of the protein in the final products. Thus, food product ingredient lists would state the presence of a sunflower protein ingredient, so that individuals who wish to avoid sunflower protein consumption for any reason would be able to identify the presence of a sunflower-derived ingredient. However, rare occurrence of a sunflower allergy does not preclude a finding that the sunflower protein is safe and GRAS.

In conclusion, the publicly available scientific literature on sunflower, sunflower protein, and other plant-based protein products, and their use as a source of dietary protein in a variety of food products, reviewed as part of this GRAS assessment, is considered sufficient to support the safe use of Austrade's sunflower protein for the proposed intended uses described herein. The long history of global human consumption of sunflower seeds (and the protein contained therein) as food, and the safety of the concentrated protein ingredient derived from them, is supported by their consumption and general lack of toxicity. As would be expected for a food that has been consumed by humans for centuries, sunflower seeds and their proteins have been subjected to limited traditional toxicology studies. However, the available summarized data in this dossier on sunflower protein support its safe use in foods.

[1] The authors did not provide information on the conversion of the dietary exposure level to a g/kg-bw basis for Study 1. However, based on the description provided for this same concept in Study 2, it is assumed that the measured feed intake was used to calculate the 13 g/kg-bw/day.

General Recognition of the Safety of Sunflower Protein

The intended use of sunflower protein has been determined to be safe through scientific procedures as set forth in 21 CFR§170.3(b), thus satisfying the so-called "technical" element of the GRAS determination and this is based on the following:

- The sunflower proteins are naturally derived from *Helianthus annuus.* The sunflower protein product is manufactured in a manner consistent with current cGMP for food (21 CFR Part 110). The raw materials and processing aids used in the manufacturing process are food grade and/or approved for use as in food.
- Austrade's proposed sunflower protein ingredient is intended only to be an alternative source of protein for current uses in food. As was concluded in the other GRAS notifications, it is not realistically expected that the actual consumption of foods containing sunflower protein would result in daily consumption greater than the DRV or RDA for protein. The proposed uses of sunflower protein will not increase the overall consumption of protein but will simply provide an alternative source of well-characterized protein from sunflower for use in food.
- Sunflower and sunflower-derived products, including sunflower protein, have a long history of use in human food, dating back thousands of years. In addition, humans have safely consumed proteins from many food sources for many years, such as meats, dairy, fruits, vegetables, nuts, seeds, and other natural, plant-based sources of protein concentrates such as canola, potato, rice, soy, and wheat.
- The composition of Austrade's sunflower protein is generally similar to that of other plant-based proteins previously notified to the FDA as GRAS. Only minor differences are noted in relative amounts of essential and non-essential amino acids present in sunflower seed meal and sunflower protein, demonstrating that the amino acid profile of sunflower is generally maintained after processing.
- Other constituents of sunflower seeds do not present any concerns related to safety and include unsaturated fats, fiber, vitamins, minerals, and antioxidants. For these reasons, this protein product derived from *H. annuus* is not expected to present any concerns related to safety for human consumption. This conclusion is corroborated by several *in vivo* studies in rats and mice in which no adverse effects were observed following consumption of sunflower protein or hydrosylates for 48–90 days (Canistro et al., 2017; Hoernicke et al., 1988; Sautier et al., 1983). No adverse effects were associated with exposure to a sunflower protein at the maximum dose tested (up to 13 g/kg-bw/day) for 90 days in rats (Hoernicke et al., 1988).
- Sunflower seed allergy is rare and the potential of sunflower protein to cause allergy would be expected to be very low at the levels of intended use. However, any potential concern for an allergic reaction in already sensitive individuals would be addressed, because the food product ingredient lists would state the presence of a sunflower-derived ingredient.
- The long history of global human consumption of sunflower seeds as food (and the protein contained therein) and the publicly available scientific literature on sunflower seeds, sunflower protein, and other plant-based protein products, and their use as a source of dietary protein in a variety of food products, reviewed as part of this GRAS assessment is considered sufficient to support the safe use of Austrade's sunflower protein for the proposed intended uses described herein.

Conclusions of the GRAS Panel

We, the undersigned members of the GRAS Panel, have individually and collectively critically reviewed the published and ancillary information pertinent to the identification, use, and safety of Austrade's sunflower protein product as described in the safety dossier titled **GRAS Determination of Sunflower Protein for Use in Food**. We conclude that the sunflower protein ingredient produced under the conditions described in the attached dossier and meeting the proposed specifications is safe.

We further unanimously conclude that the intended use of the sunflower protein as a source of protein for enrichment of conventional foods (identical to the food use of other plant-derived proteins previously deemed to be GRAS and/or notified as GRAS to the U.S. FDA), produced from sunflower in a manner that is consistent with cGMP, and meeting the appropriate specifications as presented in the supporting dossier, is GRAS based on scientific procedures.

It is our opinion that other qualified experts critically evaluating the same information, would concur with this conclusion.

[redacted]

7-Oct. 2020

Michael Carakostas, DVM, PhD
Consultant
MC Scientific Consulting LLC

Date

Stanley M. Tarka, Jr., PhD, A.T.S.
Consultant
Tarka Group, Inc.

Date

Thomas A. Vollmuth, PhD
Consultant
Vollmuth and Associates, LLC

Date

Conclusions of the GRAS Panel

We, the undersigned members of the GRAS Panel, have individually and collectively critically reviewed the published and ancillary information pertinent to the identification, use, and safety of Austrade's sunflower protein product as described in the safety dossier titled **GRAS Determination of Sunflower Protein for Use in Food**. We conclude that the sunflower protein ingredient produced under the conditions described in the attached dossier and meeting the proposed specifications is safe.

We further unanimously conclude that the intended use of the sunflower protein as a source of protein for enrichment of conventional foods (identical to the food use of other plant-derived proteins previously deemed to be GRAS and/or notified as GRAS to the U.S. FDA), produced from sunflower in a manner that is consistent with cGMP, and meeting the appropriate specifications as presented in the supporting dossier, is GRAS based on scientific procedures.

It is our opinion that other qualified experts critically evaluating the same information, would concur with this conclusion.

Michael Carakostas, DVM, PhD
Consultant
MC Scientific Consulting LLC

Date

[redacted]

07 October 2020

Stanley M. Tarka, Jr., PhD, A.T.S.
Consultant
Tarka Group, Inc.

Date

Thomas A. Vollmuth, PhD
Consultant
Vollmuth and Associates, LLC

Date

Conclusions of the GRAS Panel

We, the undersigned members of the GRAS Panel, have individually and collectively critically reviewed the published and ancillary information pertinent to the identification, use, and safety of Austrade's sunflower protein product as described in the safety dossier titled **GRAS Determination of Sunflower Protein for Use in Food**. We conclude that the sunflower protein ingredient produced under the conditions described in the attached dossier and meeting the proposed specifications is safe.

We further unanimously conclude that the intended use of the sunflower protein as a source of protein for enrichment of conventional foods (identical to the food use of other plant-derived proteins previously deemed to be GRAS and/or notified as GRAS to the U.S. FDA), produced from sunflower in a manner that is consistent with cGMP, and meeting the appropriate specifications as presented in the supporting dossier, is GRAS based on scientific procedures.

It is our opinion that other qualified experts critically evaluating the same information, would concur with this conclusion.

Michael Carakostas, DVM, PhD
Consultant
MC Scientific Consulting LLC

Date

Stanley M. Tarka, Jr., PhD, A.T.S.
Consultant
Tarka Group, Inc.

Date

[redacted]

8 Oct 2020

Thomas A. Vollmuth, PhD
Consultant
Vollmuth and Associates, LLC

Date

References

Canistro D, Vivarelli F, Ugolini L, Pinna C, Grandi M, Antonazzo IC, et al. 2017. Digestibility, toxicity and metabolic effects of rapeseed and sunflower protein hydrolysates in mice. Ital J An Sci 16(3):462–473.

CIR (Cosmetic Ingredient Review). 2016. Safety assessment of *Helianthus annuus* (sunflower)-derived ingredients as used in cosmetics. Final Report.

FDA (U.S. Food and Drug Administration). 2017. Nutrient Facts Label: Protein.

Guo S, Ge Y, Na Jom K. 2017. A review of phytochemistry, metabolite changes, and medicinal uses of the common sunflower seed and sprouts (Helianthus annuus L.). Chem Cent J 11(1):95, doi:10.1186/s13065-017-0328-7.

Hoernicke E, Lewerenz HJ, Mieth G. 1988. [Animal experimento-toxicologic studies of protein isolates in sunflower seeds]. Nahrung 32(7):691–700 (original article in German; English translation obtained).

IOM (Institute of Medicine). 2005. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. Washington, DC: The National Academies Press. https://doi.org/10.17226/10490.

National Sunflower Association. 2019. Association home page: https://www.sunflowernsa.com/.

Patel A, Bahna SL. 2016. Hypersensitivities to sesame and other common edible seeds. Allergy 71(10):1405–1413.

Sautier C, Dieng K, Flament C, Doucet C, Suquet JP, Lemonnier D. 1983. Effects of whey protein, casein, soya-bean and sunflower proteins on the serum, tissue and faecal steroids in rats. Br J Nutr 49(3):313–319.

USDA (U.S. Department of Agriculture). 2015. Usual intakes from food and beverages 2007-2010 compared to dietary reference intakes. Appendix E-2: Supplementary documentation to the 2015 the scientific report of the 2015 Dietary Guidelines Advisory Committee. Available from: https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/advisory-report/appendix-e-2.

USDA (U.S. Department of Agriculture). 2019. FoodData Central. Seeds, sunflower seed kernels, dried. Available at: https://fdc.nal.usda.gov/fdc-app.html#/food-details/170562/nutrients.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

GENERALLY RECOGNIZED AS SAFE *(GRAS)* NOTICE (Subpart E of Part 170)

Form Approved: OMB No. 0910-0342; Expiration Date: 07/31/2022
(See last page for OMB Statement)

FDA USE ONLY

GRN NUMBER	DATE OF RECEIPT
001020	06/02/2021
ESTIMATED DAILY INTAKE	INTENDED USE FOR INTERNET
NAME FOR INTERNET	
KEYWORDS	

Transmit completed form and attachments electronically via the Electronic Submission Gateway *(see Instructions)*; OR Transmit completed form and attachments in paper format or on physical media to: Office of Food Additive Safety *(HFS-200)*, Center for Food Safety and Applied Nutrition, Food and Drug Administration,5001 Campus Drive, College Park, MD 20740-3835.

SECTION A – INTRODUCTORY INFORMATION ABOUT THE SUBMISSION

1. Type of Submission *(Check one)*

☒ New ☐ Amendment to GRN No. _____ ☐ Supplement to GRN No. _____

2. ☒ All electronic files included in this submission have been checked and found to be virus free. *(Check box to verify)*

3 Most recent presubmission meeting *(if any)* with FDA on the subject substance *(yyyy/mm/dd):* _____

4 For Amendments or Supplements: Is your amendment or supplement submitted in response to a communication from FDA? *(Check one)* ☐ Yes ☐ No If yes, enter the date of communication *(yyyy/mm/dd):* _____

SECTION B – INFORMATION ABOUT THE NOTIFIER

1a. Notifier

Name of Contact Person	Position or Title
Robert Rice	Vice President, Business Development

Organization *(if applicable)*: Austrade, Inc.

Mailing Address *(number and street)*: 3309 Northlake Blvd Suite #201

City	State or Province	Zip Code/Postal Code	Country
Palm Beach Gardens	Florida	33403	United States of America

Telephone Number	Fax Number	E-Mail Address
561-586-7145		rrice@austradeinc.com

1b. Agent or Attorney *(if applicable)*

Name of Contact Person	Position or Title
Rayetta Henderson, PhD	Managing Scientist

Organization *(if applicable)*: ToxStrategies, Inc.

Mailing Address *(number and street)*: 1121 Military Cutoff Rd. Suite C, Box 352

City	State or Province	Zip Code/Postal Code	Country
Wilmington	North Carolina	28405	United States of America

Telephone Number	Fax Number	E-Mail Address
919-797-9938		rhenderson@toxstrategies.com

SECTION C – GENERAL ADMINISTRATIVE INFORMATION

1. Name of notified substance, using an appropriately descriptive term

Sunflower Protein

2. Submission Format: *(Check appropriate box(es))*

☒ Electronic Submission Gateway

☐ Electronic files on physical media

☐ Paper

If applicable give number and type of physical media

3. For paper submissions only:

Number of volumes _____

Total number of pages _____

4. Does this submission incorporate any information in CFSAN's files? *(Check one)*

☒ Yes *(Proceed to Item 5)* ☐ No *(Proceed to Item 6)*

5. The submission incorporates information from a previous submission to FDA as indicated below *(Check all that apply)*

☒ a) GRAS Notice No. GRN 000386

☐ b) GRAS Affirmation Petition No. GRP _____

☐ c) Food Additive Petition No. FAP _____

☐ d) Food Master File No. FMF _____

☒ e) Other or Additional *(describe or enter information as above)* GRN 000609

6. Statutory basis for conclusions of GRAS status *(Check one)*

☒ Scientific procedures *(21 CFR 170.30(a) and (b))* ☐ Experience based on common use in food *(21 CFR 170.30(a) and (c))*

7. Does the submission (including information that you are incorporating) contain information that you view as trade secret or as confidential commercial or financial information? (see 21 CFR 170.225(c)(8))

☐ Yes *(Proceed to Item 8*

☒ No *(Proceed to Section D)*

8. Have you designated information in your submission that you view as trade secret or as confidential commercial or financial information *(Check all that apply)*

☐ Yes, information is designated at the place where it occurs in the submission

☐ No

9. Have you attached a redacted copy of some or all of the submission? *(Check one)*

☐ Yes, a redacted copy of the complete submission

☐ Yes, a redacted copy of part(s) of the submission

☐ No

SECTION D – INTENDED USE

1. Describe the intended conditions of use of the notified substance, including the foods in which the substance will be used, the levels of use in such foods, and the purposes for which the substance will be used, including, when appropriate, a description of a subpopulation expected to consume the notified substance.

The proposed use of sunflower protein is as a source of protein for enrichment of conventional foods for all populations, identical to the food use of other plant-derived proteins previously deemed to be and/or notified as GRAS to the U.S. FDA.

2. Does the intended use of the notified substance include any use in product(s) subject to regulation by the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture?

(Check one)

☐ Yes ☒ No

3. If your submission contains trade secrets, do you authorize FDA to provide this information to the Food Safety and Inspection Service of the U.S. Department of Agriculture?

(Check one)

☐ Yes ☐ No , you ask us to exclude trade secrets from the information FDA will send to FSIS.

SECTION E – PARTS 2 -7 OF YOUR GRAS NOTICE

(check list to help ensure your submission is complete – PART 1 is addressed in other sections of this form)

☒ PART 2 of a GRAS notice: Identity, method of manufacture, specifications, and physical or technical effect (170.230).

☒ PART 3 of a GRAS notice: Dietary exposure (170.235).

☒ PART 4 of a GRAS notice: Self-limiting levels of use (170.240).

☒ PART 5 of a GRAS notice: Experience based on common use in foods before 1958 (170.245).

☒ PART 6 of a GRAS notice: Narrative (170.250).

☒ PART 7 of a GRAS notice: List of supporting data and information in your GRAS notice (170.255)

Other Information

Did you include any other information that you want FDA to consider in evaluating your GRAS notice?

☒ Yes ☐ No

Did you include this other information in the list of attachments?

☒ Yes ☐ No

SECTION F – SIGNATURE AND CERTIFICATION STATEMENTS

1. The undersigned is informing FDA that Austrade, Inc.
(name of notifier)

has concluded that the intended use*(s)* of Sunflower Protein
(name of notified substance)

described on this form, as discussed in the attached notice, is (are) not subject to the premarket approval requirements of the Federal Food, Drug, and Cosmetic Act based on your conclusion that the substance is generally recognized as safe recognized as safe under the conditions of its intended use in accordance with § 170.30.

2. Austrade, Inc. (via agent ToxStrategies, Inc.) agrees to make the data and information that are the basis for the conclusion of GRAS status available to FDA if FDA asks to see them; agrees to allow FDA to review and copy these data and information during customary business hours at the following location if FDA asks to do so; agrees to send these data and information to FDA if FDA asks to do so.
(name of notifier)

Wilmington, NC, USA
(address of notifier or other location)

The notifying party certifies that this GRAS notice is a complete, representative, and balanced submission that includes unfavorable, as well as favorable information, pertinent to the evaluation of the safety and GRAS status of the use of the substance.The notifying party certifies that the information provided herein is accurate and complete to the best or his/her knowledge. Any knowing and willful misinterpretation is subject to criminal penalty pursuant to 18 U.S.C. 1001.

3. Signature of Responsible Official, Agent, or Attorney	Printed Name and Title	Date (mm/dd/yyyy)
	Rayetta G. Henderson, PhD Managing Scientist	05/19/2021

SECTION G – LIST OF ATTACHMENTS

List your attached files or documents containing your submission, forms, amendments or supplements, and other pertinent information. Clearly identify the attachment with appropriate descriptive file names (or titles for paper documents), preferably as suggested in the guidance associated with this form. Number your attachments consecutively. When submitting paper documents, enter the inclusive page numbers of each portion of the document below.

Attachment Number	Attachment Name	Folder Location (select from menu) (Page Number(s) for paper Copy Only)
	Form3667.pdf	Administrative
	AustradeSunflowerProteinGRASSubmission_May192021.pdf	Administrative
	AppendixA_AustradeSunflowerProteinGRASSubmission_May192021.pdf	Administrative
	AppendixB_AustradeSunflowerProteinGRASSubmission_May192021.pdf	Administrative
	ExhibitI_AustradeSunflowerProteinGRAS_May192021.pdf	GRAS Notice

From: Rayetta Henderson
To: Kampmeyer, Christopher
Subject: [EXTERNAL] Re: Your submission to the FDA GRAS notification program
Date: Monday, September 13, 2021 4:29:48 PM
Attachments: image001.png
image002.png
image003.png
image004.png
image005.png
image006.png

Dear Mr. Kampmeyer,

Thank you for your email and clarifying the question below regarding the intended use of the sunflower protein.

You are correct that the intended use for this submission does not include any use in products subject to regulation by the FSIS of the USDA. On behalf of Austrade, Inc., we would like to request that FDA exclude uses in all USDA-regulated products from the intended uses described in the GRAS submission for sunflower protein.

Please let me know if you have any additional questions or require additional clarification.

Best regards,
Rayetta

Rayetta G. Henderson, Ph.D.
Managing Scientist
ToxStrategies, Inc.
Phone: +1 919-797-9938

From: "Kampmeyer, Christopher" <Christopher.Kampmeyer@fda.hhs.gov>
Date: Monday, September 13, 2021 at 2:09 PM
To: Rayetta Henderson <rhenderson@toxstrategies.com>
Subject: Your submission to the FDA GRAS notification program

Dear Dr. Henderson:

I hope this email finds you and yours well. I am emailing regarding your submission for sunflower

protein, submitted on behalf of Austrade, Inc. dated May 19, 2021.

We note that the submission includes use as an extender and binder in “processed meat products”; however, the submission does not include specific suitability data that would typically be required by USDA for their evaluation of the use of the substance in their regulated products. For USDA, “suitability” relates to the effectiveness of the ingredient or substance in performing the intended purpose of use, and the assurance that the conditions of use in a FSIS-regulated establishment will not result in an adulterated product or one that misleads consumers. Regarding effectiveness, they review evidence that the ingredient is achieving the intended technical effect in the USDA product (e.g., emulsification, flavoring, antimicrobial). USDA has asked that we not file GRAS notices with USDA-regulated uses that lack safety and/or suitability data.

We also note that the submitted Form 3667 indicates the intended use does not include any use in products subject to regulation by the FSIS of the USDA. If this is the case, it is our recommendation that you request we exclude uses in all USDA-regulated products from the intended uses described in the GRAS submission (via response to this email).

If you would like to speak to USDA to ask about the kinds of data they would need, their contact information is below:

FSIS/RIMS:
Jennifer.green@usda.gov
Cc: Stephanie.hretz@usda.gov
Cc: Melvin.carter@usda.gov

Please let me know if you have any questions.

Best regards,
Chris

Chris Kampmeyer, M.S.
Regulatory Review Scientist

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