# Application from Crescendo Organics and Natural Products, for an opinion on the substantial equivalence of their chia seeds grown in Argentina compared with The Chia Company's seeds.

# Content

# Introduction

Chia (Salvia hispanica L) is a summer annual herbaceous plant belonging to the mint family. Today, Chia is grown commercially in several Latin American countries, but they have not been consumed to a significant degree in Europe and are therefore considered novel.

The applicant's Chia seeds will be used in the same products as those for which approval has been granted in 2013 for The Chia Company under Commission Decision 2013/50/EU (bread products, breakfast cereal, fruit, nut and seed mixes and bread and 100% packaged chia seeds).

# Applicant

Crescendo Organics and Natural Products, Stuurmankade 326, 1019 WE Amsterdam, The Netherlands.

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# Composition

Our Chia (*Salvia hispanica*) seeds are obtained from the summer annual herbaceous plant Chia (*Salvia hispanica*), belonging to the *Labiatae* family, which we grow in Argentina.

Our Chia (*Salvia hispanica*) seeds are cleaned mechanically post-harvest. Flowers, leaves and other parts of the Chia (*Salvia hispanica*) plant are removed. The seeds are then categorised by size, passed on a table separator which separates them by colors. The seeds are then packed and for dispatch as wholes seeds without any further processing.

A total of three separate samples of chia seeds (references: Premium seeds – Lots : A01, AO2 and AL2) from Argentina have been submitted to an independent laboratory for testing. The test reports are all attached at Appendix 1

Tables 1 to 4 below compare the test results on the applicant's chia seeds with those on existing approved chia seeds from The Chia Company (TCC).

**Table 1. Macronutrient comparison**

| **Typical composition** | **Reference levels as per Decision 2013/50/EU for TCC** | **TCC Chia seeds %** | **Crescendo Organics and Natural Products Chia seeds (%)** |
|---|---|---|---|
| **Dry matter** | **91-96 %** | 95 - 96.8 | 93.8 – 94.0 |
| **Protein** | **20-22 %** | 17.4 – 22.4 | 23.2 – 23.4 |
| **Fat** | **30-35 %** | 28.5 – 34.7 | 33.3 – 34.1 |
| **Carbohydrate (*)** | **25-41 %** | 37.1 – 42.6 | 32.4 - 33.4 |
| **Dietary fibre (crude fibre (**))** | **18-30 %** | 32.8 – 40.2 | 40.2 – 41.6 |
| **Ash** | **4-6 %** | 4.5 – 5.6 | 3.9 – 4.1 |

(*) Calculated as 100% minus the values for protein, ash, fat and moisture
(**) Crude fibre is the part of fibre made mainly of indigestible cellulose, pentosans and lignin.

**Table 2. Fatty acids composition**

| Fatty acids g/100g | TCC Chia seeds g/100g | Crescendo Organics and Natural Products Chia seeds g/100g |
|---|---|---|
| Total Fat | 28.5 – 34.7 | 34.1 - 34.3 |
| Saturated Fat | 2.8 – 4.1 | 3.7 - 3.8 |
| Monounsaturated Fats | 2.0 – 3.0 | 2.2 |
| Polyunsaturated Fats | 17.8 – 27.8 | 28.2 – 28.3 |
| (of which C18:3 w3 Linolenic Acid) | 57.4% of total fatty acids | 63.8 – 63.9 |

**Table 3 Mineral content**

| Minerals g/100g | TCC Chia seeds mg/100g | Crescendo Organics and Natural Products Chia seeds mg/100g |
|---|---|---|
| Sodium | <0.1 - 6 | <0.1 – 0.15 |
| Potassium | 510 - 710 | 660.99 – 692.92 |
| Calcium | 500 - 640 | 529.96 - 559.43 |
| Iron | 5.7 - 15 | 6.1809 - 6.4657 |
| Magnesium | 310 - 430 | 282.20 - 297.03 |
| Phosphorus | 600 - 870 | 699.11 - 716.04 |

**Table 4. Vitamin content**

| Vitamin | TCC Chia seeds | Crescendo Organics and Natural Products Chia seeds mg/100g |
|---|---|---|
| Vitamin A (Retinol) | 1.6 IU | Not detectable |
| Vitamin C (Ascorbic acid) | < 1 – 6 mg/100g | 6 – 7 |
| Vitamin E (alpha-tocopherol) | < 0.1 – 0.3 mg/100g | 0.23 - 0.31 |

# Nutritional value

Based on the test results shown in table 1, the levels of fat, carbohydrate and dietary fibre are comparable to the approved chia seeds from The Chia Company (TCC). The only difference is the level of proteins which is slightly higher than the maximum level found in TCC' s chia seeds ( 23.4 % instead of 22.4%).

Moreover, based on the test results shown in table 2, the levels of total fats and more specifically omega-3 fatty acids, one of the most important components of chia seeds are all on average within the range to those found in the TCC seed.

Based on the test results shown in table 3, the mineral contents for sodium, potassium, calcium, iron and phosphorus are all within the range to the one found in TCC chia seeds, and only slightly less than the TCC chia seeds for magnesium (282.20 - 297.03% rather than 310 – 430%).

Based on the test results shown in table 4, the vitamins A, C and E contents are within the range of TCC chia seeds, one sample of chia seeds has shown a vitamin C level slightly higher than the maximum found in TCC chia's seeds (7 mg/100g instead of 6 mg/100g).

Overall, we believe that nutrient profile of the applicant's chia seed is very similar to the one found in EU approved TCC' s chia seeds. We have noticed some slight differences in nutrient content (protein, magnesium and vitamin C) but these do not seem significant in our view. In our view, those minor variations in composition are to be expected due to natural variations of nutrient content between crops

as a consequence of different factors including soil type and history, seed type, time of harvest and local climate as well as the fact that chia seeds are minimally processed natural products.

# Metabolism

On the basis of the compositional and nutritional data provided above, there is no reason to anticipate differences in how the food is metabolised.

# Intended uses

Our Chia (*Salvia hispanica*) seeds will be limited to be used in the following products per Decision 2013/50/EU:

**Table 5. Intended use of Chia (*Salvia hispanica*) seeds**

| Food uses | Levels of use |
|---|---|
| Baked products | not more than 10 % |
| Breakfast cereals | not more than 10 % |
| Fruit, nut and seed mixes | not more than 10 % |
| Pre-packaged Chia seed as such | not more than 15 g per day |

# Level of undesirable substances

Batches of our chia seeds have been tested for undesirable substances. Results are summarise in tables 5 and 6 below.

**Table 6 Heavy metals and aflatoxins**

| Heavy metals mg/kg (ppm) | TCC Chia seeds (ppm) | Crescendo Organics and Natural Products Chia seeds (ppm) |
|---|---|---|
| Arsenic | < 0.1 | 0.018-0.019 |
| Cadmium | < 0.1 | Not detectable |
| Mercury | < 0.01 - < 0.02 | Not detectable |
| Lead | < 0.5 - < 1.0 | Not detectable |
| Sum of Aflatoxins B1+B2+G1+G2 | < 5 | < 5 |

**Table 7 . Microbiolgical contaminants**

| Colony forming unit | TCC Chia seeds | Crescendo Organics and Natural Products Chia seeds |
|---|---|---|
| Total yeast count | < 200 cfu/g | <10 cfu/g |
| Total mould count | < 200 cfu/g | <10 cfu/g |
| Coagulase positive Staphylococcus areus | < 100 – 200 cfu/g | <10 cfu/g |
| Bacillus cereus | < 100 – 200 cfu/g | <10 cfu/g |
| Salmonella/25g | Not detected/25g | Not detected/25g |
| Presumptive Enterobacteriaceae | Not available | <10 cfu/g |
| E coli* | < 10 – 20 cfu/g | <10 cfu/g |
| Listeria/25g | Not detected / 25g | Not detected |
| Presumptive Clostridium perfringens | < 100 - <200 cfu/g | Not detected |

*E coli not tested given the low result for enterobacteriaceae

# Labelling

We will inform our client to declare the novel food ingredient as: Chia seed (*Salvia hispanica*) in the ingredient list when used in baked goods, breakfast cereals, Fruit, nut and seed mixes.

We will also inform our client to provide additional labelling for pre-packaged Chia (*Salvia hispanica*) seed to state that the recommended daily intake is no more than 15 g.

# Conclusion

This is a request to the competent authorities of the United Kingdom (the UK Food Standards Agency) for an opinion on the substantial equivalence of the chia seeds from Crescendo Organics and Natural Products grown in Argentina to the approved chia seeds from The Chia Company, 262-276 Lorimer Street, Port Melbourne, VIC 3207 Australia, under Decision 2013/50/EU.

This request is aimed to address the five criteria set in Article 3(4) of regulation (EC) 258/97 (as amended): 1) composition, 2) nutritional value, 3) metabolism, 4) intended use, 5) level of undesirable substances.

# Appendix 1