Substantial Equivalence Application for Chia seeds

Applicant:

Nutrisure Ltd trading as Supernutrients

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Contact:

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Novel food to be considered:

Chia seed (Salvia hispanica)

1. Composition

Salvia hispanica originates from South and Central America, where it was first cultivated for human use over 4,000 years ago by the Aztecs, Mayans and other native American tribes who relied on the seed as a staple food crop. Today, the plant is increasingly grown on a commercial basis as demand grows for its beneficial nutritional properties.

Our chia is grown from seed selected for resistance to pests. Once ready for harvest, the seeds are initially cleaned by removing the plant material (leaves and flowers), and then passed through a vibration cleaning mechanism to separate the chia seed from any small objects. The seeds are dried if necessary, manually inspected and tested and then packed for dispatch as the whole seed without any further processing.

Three separate batches of chia seed from Argentina (reference numbers 142012; C30267-2; 837/13) have been submitted by Supernutrients to an independent laboratory for testing. The test reports are attached at appendix 1.

The tables below compare the test results with those of an existing approved chia seed, from The Chia Company (TCC).

Table 1: Macronutrient comparison

Nutrient	Supernutrients' Chia Seeds g/100g	TCC Chia Seeds g/100g
Dry matter	91.2 - 92.7	95 - 96.8
Protein	19.5 - 22.6	17.4 - 22.4
Fat	27.3 - 28.8	28.5 - 34.7
Carbohydrate	36.9 - 39.2	37.1 - 42.6

Available Carbohydrate	6.2 - 8.1	Not available
Fibre	28.8 - 33.0	32.8 - 40.2
Ash	4.5 - 4.7	4.5 - 5.6
Moisture	7.1 - 8.8	Not available

Table 2: Fatty Acid composition

Fatty Acids g/100g	Supernutrients' Chia Seeds g/100g	TCC Chia Seeds g/100g
Total Fat	27.3 - 28.8	28.5 - 34.7
Saturated Fat	2.5 - 2.9	2.8 - 4.1
Monounsaturated Fats	1.4 - 1.8	2.0 - 3.0
Polyunsaturated Fats	21.6 - 23.2	17.8 - 27.8
(Of which C18:3 ω3 Linolenic Acid)	59.3 - 63.0% of total fatty acids	57.4% of total fatty acids

Table 3: Mineral Content

Mineral mg/100g	Supernutrients' Chia Seeds	TCC Chia Seeds
Sodium	<50	<0.1 - 6
Potassium	460 - 520	510 - 710
Calcium	430 - 460	500 - 640
Iron	5.5 - 6.6	5.7 - 15
Magnesium	230 - 270	310 - 430
Phosphorus	520 - 640	600 - 870

Table 4: Vitamin Content

Vitamin	Supernutrients' Chia Seeds	TCC Chia Seeds
Vitamin A (Retinol)	<60µg/100g*	1.6 IU
Vitamin C (Ascorbic Acid)	1.5 - 2.1 mg/100g	<1 - 6 mg/100g
Vitamin E (α-tocopherol)	0.2 - 0.3 mg/100g	<0.1 - 0.3 mg/100g

*60µg is the limit of detection.

2. Nutritional Value and 3. Metabolism

Tables 1 to 4 above show that the levels of significant macro- and micro- nutrients are comparable to the approved chia seed. The Supernutrients' chia seed is higher in protein but lower in total fat than the TCC seed. However, the levels of omega 3 fatty acids, one of the most important components of chia seed, are on average very similar between the two seeds.

While the vitamin content is within the range of TCC chia, the potassium and phosphorus content of Supernutrients' chia seed is at the lower end the range of values for TCC chia, and slightly less than TCC chia in the case of calcium and magnesium.

There are many factors that can affect the nutrient variability of crops, including soil type and history, seed type, time of harvest, local climate, processing and storage. Given the range and complexity of these factors, coupled with the fact that the chia seed is a minimally processed natural product, some minor variations in composition are to be expected.

However the differences in mineral content are not significant and it is our view that the Supernutrients' and TCC seed are very similar in nutritional value. On this basis there is no reason to anticipate differences in how the food is metabolized.

4. Intended use

Uses of the Chia seed will be limited to the categories below.

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

5. Level of undesirable substances

The batches of chia seed (test reports are attached at appendix 1) have been tested for undesirable substances. The results are at tables 5 and 6 below.

Table 5: Heavy metals and Aflatoxins

Heavy metals mg/kg (ppm)	**Supernutrients' Chia Seeds**	**TCC Chia Seeds**
Arsenic	<0.02 - 0.03	<0.1
Cadmium	<0.005 - 0.007	<0.1
Mercury	<0.02	<0.01 - <0.02
Lead	<0.01 - 0.01	<0.5 - <1.0
Aflatoxins µg/kg (ppb)		
Sum of Aflatoxins B1 + B2 + G1 + G2	<0.4	<5

Table 6: Microbiological contaminants

Colony forming unit (cfu)/g	Supernutrients' Chia Seeds	TCC Chia Seeds
Total yeast count	<20	<200 CFU/g
Total mould count	<20 - 20	<200 CFU/g
Coagulase Positive Staphylococcus aureus	<20	<100 - 200 CFU/g
Bacillus cereus	<20	<100 - 200 CFU/g
Salmonella/25g	Not detected	Not detected/25g
Presumptive Enterobacteriaceae	<10	Not available
E.coli*	Not tested*	<10 - 20 CFU/g
Listeria/25g	Not detected	Not Detected/25g
Presumptive Clostridium perfringens	<10	<100 - <200 CFU/g

*E.coli not tested given the low result for Enterobacteriaceae

The tables above show that levels of heavy metals, aflatoxins and microbiological contaminants are below or within the equivalent levels of the approved chia seed. In terms of quality control procedures, we are satisfied that our supplier has the appropriate technical capability, quality control and testing procedures to ensure the ongoing safety of the chia seed.

6. Other relevant data

Proposal for labelling: Chia seed (Salvia hispanica). Where sold to the final consumer, additional labelling will state that the recommended daily intake is 15g.

Conclusion

The data contained in this application demonstrates that the chia seed presented by Nutrisure Ltd t/a Supernutrients is substantially equivalent to the approved chia seed.