

ADVISORY COMMITTEE FOR NOVEL FOODS AND PROCESSES

Moringa stenopetala – TRADITIONAL FOOD NOTIFICATION NF 2018/0302

ISSUE

1. A notification has been received under the traditional foods authorisation process for *Moringa stenopetala* leaf powder under the Novel Foods Regulation (EU) No 2015/2283.
2. The Committee is asked whether there are safety concerns with the proposed use of this traditional food in the EU market. The information from the Committee will provide the basis for any safety objections raised at EU level.

Background

3. On 5 March 2019 the European Commission forwarded the notification from Waka Waka Organic Moringa Products Export PLC for *Moringa stenopetala*, a tree species from Ethiopia. The applicant intends to sell the leaves in powder form within the food categories: Peeled, cut and shredded fruits and vegetables; dried fruits and vegetables; foods suitable for people intolerant to gluten; other (herbal and fruit infusion).
4. Member States have four months until 5 July to submit any reasoned objections to the notification. If authorised, the authorisation will be open to any company subject to the specification and conditions of use detailed in the authorisation.
5. The notification dossier is attached as **Annex A** with its associated appendices. **Annex A** contains confidential information.

This application

Identification, composition, specifications

6. The applicant describes *Moringa stenopetala* as one of 13 species of tree from the family *Moringaceae* (African moringa tree), native to Ethiopia and northern Kenya in elevations between 1000 and 1800m. They point to the similarities between *Moringa stenopetala* and *Moringa oleifera* (Annex 3), another species of *Moringa* tree whose leaves and seed pods have a history of consumption in the EU. The

novel food is grown, processed and packaged in Konso, a region of Ethiopia with a long history of consumption of the food, according to the applicant (Annex 6).

7. Within the specification section, the applicant did not provide a unified table, and instead referred to various references to establish the specification levels.

Annex 3: Dried leaf samples as specification provided by the applicant:

	Moisture	Protein	Fat	Crude fibre	Ash	Carbohydrate	Energy
Energy content (100g)	8.09%	28.44%	0.7%	11.62%	12.63%	38.49%	274 kcal
	Fe	Ca	Zn	Cu	P	K	Na
Mineral content (mg/100g)	54.85	1,918	2.16	0.78	38.19	2,094	214.10

8. The applicant refers to two studies (Annex 3 and 10), to identify the composition of the novel food. In the first one, *Moringa stenopetala* leaf powder samples from 5 regions in Ethiopia were tested, for which the applicant remarks their product pertains to the Southern Nations, Nationalities and Peoples' Region (SNNPR). The second study was performed on samples from the Konso area.

Annex 3: Proximate analysis data on *Moringa stenopetala* leaf powder by region of growth:

Region (Ethiopia)	Moisture (%)	Protein (%)	Fat (%)	Crude Fibre (%)	Ash (%)	Carbohydrate (%)	Energy (kcal/100grams)
Tigray	9.13	28.28	0.76	11.24	10.21	40.35	281.43
Amhara	8.17	27.08	0.66	12.22	12.06	39.79	273.43
Oromia	8.35	26.92	0.90	9.81	12.34	41.66	282.41
SNNPR	7.60	31.15	0.30	12.92	14.94	33.07	259.64
Dire Dawa	6.39	29.75	1.22	10.64	14.98	36.98	278.02

Region	Fe mg/100g	Ca mg/100g	Zn mg/100g	Cu mg/100g	P mg/100g	K mg/100g	Na mg/100g
Tigray	65.84	2244.9	2.01	0.82	49.31	1699.9	250.33
Amhara	34.85	1413.2	2.10	0.94	38.00	2153.8	100.68
Oromia	60.63	2156.5	2.23	0.64	33.08	2070.0	236.17
SNNPR	55.25	2298.2	2.44	0.39	39.32	2274.2	314.67
Dire Dawa	83.36	1660.6	1.94	1.18	21.94	2383.2	207.14

Annex 10: Proximate analysis on *Moringa stenopetala* leaf powder

Chemical analytical Parameter	Leaves	Leaf Powder
Moisture (%)	75.00	7.50
Calories (kcal/100g)	92.00	205.00
Protein (g/100g)	6.70	27.10
Fat (g/100g)	1.70	2.30
Carbohydrate (g/100g)	13.40	38.20
Fibre (g/100g)	0.90	19.20
Minerals (g/100g)	2.30	0.00
Ca (mg/100g)	440.00	2,003.00
Ma (mg/100g)	24.00	368.00
P (mg/100g)	70.00	204.00
K (mg/100g)	259.00	1324.00
Cu (mg/100g)	1.10	0.60
Fe (mg/100g)	7.00	28.20
S (mg/100g)	137.00	870.00
Oxalic acid (mg/100g)	101.00	0.00
Vitamin A-B carotene (m/100g g)	6.80	16.30
Vitamin B choline (mg/100g)	423.00	0.00
Vitamin B1 thamin (mg/100g)	0.21	2.60
Vitamin B2 riboflavin (mg/100g)	0.05	20.50
Vitamin B3 nicotinic acid (mg/100g)	0.80	8.20
Vitamin C-ascorbic acid (mg/100g)	220.00	17.30
Vitamin E-tocopherol acetate (mg/100g)		113.00

9. The applicant also provided a table from the same study evaluating similarities between *Moringa stenopetala* and *Moringa oleifera*, which has a history of consumption in the EU (Annex 3):

Species	Moisture (%)	Protein (%)	Fat (%)	Crude Fiber (%)	Ash (%)	Carbohydrate (%)	Energy (kcal/100grams)
<i>M. Stenopetala</i>	8.09	28.44	0.70	11.62	12.63	38.49	274.1
<i>M. Oleifera</i> (Ethiopia)	7.02	25.57	0.34	8.51	11.81	46.76	292.40
<i>M. Oleifera</i> (Ghana)	-	27.51	2.23	19.25	7.13	43.88	305.6
<i>M. Oleifera</i> (Burkina Faso)	5.9	27.1	17.1	19.4	11.1	38.6	339.1

10. The applicant mentions that biological active compounds (glycosides) can be found as part of the novel food's composition, identified as Rutin, 4-(4'-O-acetyl—L-rhamnosyloxy)-benzylisothiocyanate and 4-(4'-O-acetyl-L-rhamnosyloxy)-benzaldehyde (Annex 3). The applicant establishes levels of phytates and tannins as 378.44 mg/100gm and 358.89 mg/100gm respectively and describes that the drying process helps reduce natural levels of antinutrients. Annex 3 as provided by the applicant also shows a table for antinutritional factors concentration on the final product:

Region	N	Phytate	Tanin	Phy: Fe molar ratio	Phy: Zn molar ratio	Phy: Ca molar ratio
Tigray	8	419.01	455.98	0.67	20.72	0.011
Amhara	12	302.53	272.95	0.74	14.46	0.013
Oromia	6	356.31	462.68	0.62	15.56	0.010
SNNPR	8	459.01	284.65	0.76	19.05	0.012
Dire Dawa	4	397.13	415.39	0.40	20.57	0.014
Total	38	378.44	358.89	0.67	17.56	0.012

11. The applicant states that the stability of the dry leaves depends upon the level of humidity and re-humidification, that could lead to growth of mould and mildew. According to the applicant, storage in polythene bags in a cool, dry environment under 24°C will preserve the protein and mineral content for 6 months, with a 50% loss of vitamins within that period. Details on how temperature and humidity are controlled, as well as a shelf-life estimate, were not provided by the applicant.
12. The applicant states that once processed, the leaf powder is sterilised through e-beam treatment with a dose of 8kGy. Results in 5 samples show absence of *Escherichia coli* β -glucuronidase, *Staphylococcus aureus*, *Clostridium spp.*, *Salmonella*, *Listeria monocytogenes*, moulds and yeasts. The laboratory that carried out the study remarks that the methods used are not in possession of ENAC certification.

Production process

13. According to the applicant, the leaves of *Moringa stenopetala* are first stripped from the petiole, then washed and dried before producing the powder. The powder is produced by milling the dry leaves. The powder is then packed in polythene bags, heat sealed and stored in a cool, dry place.
14. The applicant describes the methods used for pests and disease control at the cultivation stage, including the use of *Bacillus thuringiensis* as an organic insecticide, and precautions for avoiding termite attacks and diseases caused by *Cercospora sp.*, *Septoria hycopersici* and *Alternaria soliani* fungi.

History of traditional use

15. The applicant describes how the species *Moringa stenopetala* as a species has been recorded, grown and consumed for centuries as stated by Konso Woreda Agriculture and Natural Resource Development Office (Annex 6). The applicant outlines the evidence to support the traditional consumption of the plant. Its fruits and leaves have been traditionally consumed for generations, and increasingly so,

with leaf powder emerging as a food to combat malnutrition. This effort has been acknowledged and funded by international institutions (Annexes 4 and 4.1).

16. The applicant provided the production and sales data available to 3 manufacturers in Ethiopia, with data varying between 2,000kg and 23,000kg of *Moringa stenopetala* leaf powder annual sales. The year was not specified by the applicant. Transactions within tribal communities are well known but no records or estimations of the quantities are available. The applicant also provided a description of 5 *Moringa stenopetala* traditional recipes using fresh leaves or the flowers, for which the reference was not provided.
17. The applicant also describes the leaf powder to have been used amongst tribal communities as a traditional medicine agent. They provide 3 links to references that show how consumption of the Novel Food has not shown toxic action in humans and acts as a natural coagulant, antimicrobial agent and heavy metal remover.
18. The applicant claims that the product is safe for consumption, linking the commercial activity to the national and international efforts (UNIDO, the EU and the World Bank) for development of the region of Konso in Ethiopia, as well as additional evidence of the investment of international institutions in the region for the production of *Moringa stenopetala* products. References were provided by the applicant (Annex 7, 8).

Conditions of use in EU market

19. The applicant describes that *Moringa stenopetala* leaf powder comes to Europe already packaged and ready for consumption and can be used in place of fresh leaves to make leaf sauces, added to other sauces or sprinkled to every meal, with no perceptible effect on taste and incrementing the nutritional daily intake. The novel food as intended to be used falls under the categories: Peeled, cut and shredded fruits and vegetables; dried fruits and vegetables; foods suitable for people intolerant to gluten; other (herbal and fruit infusion).
20. The applicant proposes a maximum intake level of 0.2g per kg of weight per day for adults. Other recommended daily intake levels provided include 25g/day for children and 50g/day for breastfeeding women.
21. The applicant recommends an adaptation period of 3-5 days for the consumption of the novel food. No rationale was provided for this statement. Furthermore, it is

recommended that people with a sensitive stomach should reduce the intake, due to a reduced assimilation.

Additional information provided by the applicant

22. No literature search was described by the applicant. They have also not provided information on the potential allergenicity of the novel food or the potential for cross reactivity in individuals with other known food allergies.

COMMITTEE ACTION REQUIRED

- Members are asked whether there are safety concerns that need to be managed with this traditional food from third countries.
- The Committee's advice will form the basis for the UK's formal response to the Commission and whether reasoned safety objections are submitted.

**Secretariat
April 2019**

Annexes attached:

Annex A Notification dossier for *Moringa stenopetala* as a traditional food from third countries.