COMMITTEE PAPER FOR DISCUSSION **ACNFP/128/05**

ADVISORY COMMITTEE FOR NOVEL FOODS AND PROCESSES

PHYTOSTEROLS FROM XI'AN HEALTHFUL BIOTECHNOLOGY

ISSUE

The Committee reviewed this application at the January teleconference and the February meeting. Members requested further information on which to base their assessment. Members are invited to consider the response from the applicant and whether it considers substantial equivalence has been demonstrated.

Background

1. In 2004, Archer Daniels Midland (ADM) gained authorisation for use of its phytosterols as a novel ingredient in the following products: yellow fat spreads, salad dressings, milk type products, fermented milk type products, soya drinks and cheese type products.

2. Under Article 3(4) of the Novel Foods Regulation (EC) 258/97, the Chinese company Xi'an Healthful Biotechnology is requesting an opinion from the UK Competent Authority (CA) on the equivalence of their phytosterols with phytosterols sold by ADM, for use in the same range of products.

3. Regulation (EC) 258/97 makes provision for novel foods or ingredients that are substantially equivalent to an existing product to be placed on the market once the applicant has notified the Commission. In most cases, the Commission requires that the applicant first obtain an opinion on equivalence from a Member State. Xi'an Healthful Biotechnology is requesting such an opinion from the UK Competent Authority.

4. According to Article 3(4) of (EC) 258/97, the notification procedures applies to "foods or food ingredients…which on the basis of the scientific evidence available and generally recognised or on the basis of an opinion delivered by one of the competent bodies…are substantially equivalent to existing foods or food ingredients as regards to their:

    - Composition
    - Nutritional value
    - Metabolism
    - Intended use, and
    - Level of undesirable substances contained therein."

5. At the January and February Meetings Members requested further information in a number of areas to judge whether the Xian healthful Biotechnology product was substantially equivalent to the ADM product. Namely:

    a) Specifications

    b) Effect of the production process applied to the novel food

    c) Toxicology

    d) Intakes of the novel ingredient

6. A letter outlining the concerns raised with the applicant is provided in **Annex A**. The applicant has now provided a response to the Committee's questions **Annex B** with four appendices to provide supporting information. Also provided is analysis of the end product for heavy metal residues provided in **Annex C**. A draft opinion has been prepared for consideration if the Committee considers it is appropriate in **Annex D**. Particular aspects where the Secretariat would welcome further input from the Committee are highlighted in the text.

a) Specification of the novel food

7. The Committee had commented that from the information provided it was difficult to determine the composition of the Xi'an Healthful Biotechnology product and therefore whether it was substantially equivalent. Further information was requested on the product that is being sought substantial equivalence for i.e. the free phytosterols or esterified form.

8. The applicant has clarified that they are seeking equivalence for their phytosterol ester product only. The information on free esters was provided for completeness as the material prior to the esterification process. The Secretariat has checked the phytosterols and phytostanols authorisation for ADM. The novel ingredient in this case was defined as 'Phytosterols and phytostanols are sterols and stanols that are extracted from plants and may be presented as free sterols and stanols or esterified with food grade fatty acids.

9. The applicant has presented a summary of their results of the analysis of their product produced with the new process and ADM which have been reproduced below. They have also provided again the chromatogram provided for the February meeting for completeness (**Annex B**).

Composition (with GC-FID or equivalent method)	Requirements 2004/333/EC(3) ADM	Xi'an Healthful Biotechnology		
		Batch NO. CPB160914	Batch NO. CPB161121	Batch NO. CPB170118
Total plant sterols, %	Min. 56	59.68%	59.74%	59.93%
Total plant sterol esters, %	Min. 90	96.42%	97.63%	97.86%
Free sterols, %	Max. 5.0	0.87%	0.78%	0.82%
Beta-sitosterol	<80%	44.13%	45.76%	45.82%
Stigmasterol	<30%	25.21%	25.49%	26.31%
Brassicasterol	<3%	0.69%	0.76%	0.66%
Sitostanol	<15%	0.00%	0.00%	0.00%
Campesterol	<40%	25.03%	26.12%	25.16%
Campestanol	<5%	1.36%	1.42%	1.37%
Peroxide value, meq/kg	Max. 5.0	0.36	0.47	0.42
Acid value, mg KOH/g	Max. 1.0	0.77	0.72	0.69
Moisture, %	Max. 0.1	0.08	0.07	0.08
Heavy metals, ppm	Max. 10	Complies	Complies	Complies
Standard plate count, per g	Max. 1,000	Complies	Complies	Complies
Yeast & mould, per g	Max. 300	Complies	Complies	Complies
Salmonella	Neg	Neg	Neg	Neg
E. coli	Neg	Neg	Neg	Neg
Staph. aureus	Neg	Neg	Neg	Neg

b) Effect of the production process applied to the novel food

10. The Committee sought clarification on the production process in particular any catalysts used in the process. They requested comments from the applicant on the rationale for the heavy metal contaminants analysed in order to ensure relevant metals had been tested for in the assessment.

11. The applicant has responded clarifying that they have recently changed their production process to remove use of a sodium hydrogen sulphate as a catalyst in the esterification process. This was to improve the safety of the product. A further three batches of product (CPB160915, CBP161121, CBP170118) produced with this process have been analysed and the results provided in their response. This includes analysis of heavy metals namely Lead, Arsenic, Cadmium and Mercury.

12. In response to the previous queries the applicant has also supplied additional analysis of three batches (CPB160102, CBP160301, CPB160801) of product produced under the previous process, for heavy metals namely Mercury and Cadmium which should be read in conjunction with the information provided on Lead and Arsenic provided in Appendix 3 and 9 of the original dossier.

13. The Committee also sought more information on the source material both in terms of the plant species used and the geographic origin. The applicant has now explained that the phytosterol ester for which they are seeking substantial equivalence is produced from a range of plant sources primarily edible soya oil. However, other plant sterol sources are also used such as corn and pine oil.

14. The Secretariat notes that tall oil produced from pine trees as a source of phytosterols has been seen in a number of applications for phytosterols and in the substantial equivalences. A table summarising the data for authorisations in the UK is provided in **Annex E** for comparison.

c) Toxicological information on the novel food

15. While it was noted that toxicological information is not required in a substantial equivalence authorisation, as this has been provided by the applicant the Committee had sought clarification on the relevance of the information provided to the novel ingredient under assessment. In response the applicant has clarified that their product due to the primary composition is very similar to the material tested by Unilever in the studies presented in the dossier and therefore the studies support the safety of their material.

16. The applicant provided further information for the February meeting on studies undertaken on their novel ingredient. They have explained that in these studies ADM and the Xian Healthful product were considered in parallel; with the results the applicant suggests supporting the safety of their novel ingredient.

d) Intakes of the novel ingredient

17. The Committee also sought an explanation from the applicant on how they would ensure that they were not extending the exposure to phytosterols by authorising this product. The applicant’s response in February indicated that they will be using the phytosterol ester in line with the authorisation and that the intention is that their product be used as an alternative to other phytosterol products authorised for use by product manufacturers in the EU.

COMMITTEE ACTION REQUIRED

a) The Committee is asked whether the response from the applicant is sufficient to address the questions raised in February 2017 and whether substantial equivalence has been demonstrated.

b) If not, the Committee is asked to indicate what feedback should be given to the applicant.

Secretariat
April 2017

Annexes attached:

Annex A – Letter providing feedback to the applicant from the February meeting of the ACNFP.

Annex B - The applicant's response to the request for further information which includes 4 appendices.

Annex C – Certificates of analysis for heavy metals in product produced by the old production process.

Annex D – Draft opinion for the Committee's input.

Annex E – Summary of composition of previously authorised phytosterol ingredients in the UK

Annex E - Summary of composition of previously authorised phytosterol ingredients in the UK

		Tall oil based			Soya oil based			
Fatty acids as a percentage	Specifications from 2004/335EC	DDO	Prima/DRT*	Forbes	Lipofoods	Naturis	Cognis	Triple crown
β-sitosterol	< 80 %	81.8-86.3	75.9-76.6	40-71	40.0-44.0	55.17 - 55.7	45.5-52.7	48.4-49.3
β-sitostanol	< 35 %	10.2-11.1	11.1-11.6	9.0-31.0	0	3.69-3.72	2.1-3.5	0
campesterol	< 40 %	5.5-6.2	8.0-9.3	6.0-21.0	23.4-26.0	27.29 - 27.79	23.4-28.6	25.5-27.2
campestanol	< 15 %	0.7-0.8	1.2-1.1	2.0-11.0	0	1.28-1.4	0.6-0.7	0
stigmasterol	< 30 %	0.5-0.9	0	0-1.0	23.6-26.0	3.55	14.4-19.0	16.8-22.7
brassicasterol	< 3 %	0	0	0	1	0	2.3-2.9	2.0-2.8
other sterols/stanols	< 3 %	0	2.4-2.5	0†	<3	2.94	2.9-3.1	0.6-1.2

* DRT produce the phytosterols by Primapharm

† minor sterols - 5.0-15.0