ACNFP

Advisory Committee on Novel Foods and Processes

Annual Report 2004

Advisory Committee on Novel Foods and Processes – Annual Report 2004

The Advisory Committee on Novel Foods and Processes (ACNFP)
is an independent body of experts whose remit is:

'to advise the central authorities responsible, in England, Scotland, Wales and Northern Ireland respectively on any matters relating to novel foods and novel food processes, including food irradiation, having regard where appropriate to the views of relevant expert bodies.'

Further copies may be obtained from:

ACNFP Secretariat
Food Standards Agency
Room 515B
Aviation House
125 Kingsway
London WC2B 6NH
Tel: 020 7276 8595
Fax: 020 7276 8564
email: acnfp@foodstandards.gsi.gov.uk

Advisory Committee on Novel Foods and Processes

Annual Report 2004

FOOD STANDARDS AGENCY

Contents

Foreword

This is the sixteenth annual report of the ACNFP and the second under my Chairmanship.

The primary role of the ACNFP remains the assessment of dossiers for authorisation of new products under the EU procedures for novel foods, which are set out in Regulation (EC) No 258/97. Until April 2004 the scope of this regulation included all foods produced using genetically modified organisms (GMOs). However, GM foods are now regulated under a separate regulation that sets out a centralised procedure for risk assessments, which are the responsibility of the European Food Safety Authority (EFSA). Nevertheless, the Committee still has a role in advising the Food Standards Agency on GM foods – for example by contributing to EFSA's risk assessments or by advising the Agency on other GM issues.

In order to fulfil its role the ACNFP continues to call upon Members with expertise in a wide range of scientific disciplines, as well as two consumer representatives and an ethicist. I would like to take this opportunity to thank my fellow Committee Members for their expert advice, hard work and support throughout the year. I consider it a great privilege to work with so many highly qualified experts. At this time it is also appropriate for me to acknowledge the contributions of Professors Phil Dale and John Warner whose appointments to the Committee came to an end in December 2004.

The contents of this report reflect both the number and variety of applications that have been considered by the Committee and the hard work of the Secretariat, whose assistance and support continues to be exemplary and is invaluable to the effective operation of the Committee.

Professor Mike Gasson
March 2005

Introduction

This is the sixteenth Annual Report of the work of the Advisory Committee on Novel Foods and Processes (ACNFP).

The ACNFP considered a number of novel food applications in 2004, details of which are in Sections 1, 2 and 3 of this report. The summary reports of applications have been split into 4 sections; full applications submitted to the UK Competent Authority; substantial equivalence applications submitted to the UK Competent Authority; applications submitted to other Member States; and notifications received by the UK Competent Authority. Those topics discussed during 2004 that were continuations of previous work are indicated as such.

Other issues that the Committee has dealt with during 2004 are described in section 4 of the report. A cumulative index of topics considered in the ACNFP's Annual Reports from 1989 to 2004 can be found in Section 11. Hard copies of previous reports can be obtained from the Committee Secretariat (see section 7). Alternatively all ACNFP reports, as well as other information on the Committee can be found on its web pages on the Food Standards Agency (FSA) website.[1]

[1] www.food.gov.uk/science/ouradvisors/novelfood

1 Full applications submitted to the UK Competent Authority

1.1 Lycopene from *Blakeslea trispora*

This application was described in the 2003 Annual Report. Following a request for additional information from the Committee, the applicant provided information regarding the interpretation of results obtained from the toxicity studies, demonstrated that the final ingredient was free from anaerobic spore-forming organisms, and showed that levels of residual solvent were within the maximum permitted levels.

The Committee was content that the additional information supplied by the applicant adequately addressed the issues and completed the assessment of this product. The opinion is attached at Appendix II. Following reasoned objections raised by the competent authorities in some of the other EU Member States, this application has been referred to the European Food Safety Authority (EFSA).

1.2 Isomaltulose

This application was described in the 2003 Annual Report. The applicant was asked to provide additional information to address the concerns raised by the Committee at its November 2003 meeting.

The applicant's responses were considered at the February 2004 meeting. Members were satisfied that the applicant had demonstrated that the levels of heavy metals were low in isomaltulose and that there was no polymorphism in the metabolism of this novel food ingredient.

However, the Committee reiterated their concerns regarding the labelling of the product, noting that the term "reduced sweetness" could mislead the consumer into thinking that the product contained less energy. The Committee therefore requested a programme of post-market monitoring to assess whether consumers correctly understood claims relating to "reduced sweetness" or "delayed energy release".

Following this meeting, the Committee's initial opinion was finalised and forwarded to the Commission for consideration by other Member States in March 2004. A copy of this opinion is attached in Appendix III.

No objections were raised by the competent authorities in other Member States, with respect to the safety of the novel food, during the 60-day comment period. An authorisation decision is expected to be taken early in 2005.

1.3 Clinoptilolite

The ACNFP was invited to consider an application from the UK company Euremica Environmental, seeking authorisation of clinoptilolite as a novel food ingredient.

Clinoptilolite is a naturally occurring zeolite, aluminosilicate mineral. It is formed by the devitrification (i.e. the conversion of glassy material to crystalline material) of volcanic ash in lake and marine waters millions of years ago. The applicant wished to market clinoptilolite as a food supplement in capsules. The major property of clinoptilolite is cation exchange, which is claimed to help remove toxins from the body, such as commonly consumed heavy metals (e.g. lead, cadmium), by acting in the gastrointestinal tract. Clinoptilolite is not considered to be a medicinal product.

The Committee considered this application at its February meeting and raised a number of concerns, which were forwarded to the applicant to address.

The Committee raised concerns over the identity of the protein present in the product and noted that treatment at 100°C was insufficient to ensure complete denaturation of protein. Members therefore requested a characterisation of this protein, in order to assess potential allergenicity. They also considered that the proposed heat treatment was insufficient to kill any spores that may be present in the product, such as Clostridium spores and requested that analyses were carried out for spore-forming organisms.

Members observed that clinoptilolite has been demonstrated to interfere with the absorption or activity of medicines and nutrients such as beta-carotene and trace elements, and that it may also interfere with the activity of gut hormones. The Committee therefore requested results from further studies to determine the extent of this interference.

The Committee considered that the toxicity studies provided were insufficient due to lack of study detail and the lack of chronic studies. The product is intended to be consumed on a chronic basis and the data provided did not give sufficient reassurance of safety.

The Committee voiced concerns over the possibility of crystalluria due to the high silicon content of the product, especially in people with existing kidney problems.

Members suggested that either a dose for children should be indicated on the container or the label should state that the product is not for consumption by children.

The applicant has not yet responded to the ACNFP's concerns.

1.4 Lycopene oleoresin from tomato

The ACNFP was asked to consider an application from Berry Ottaway & Associates Ltd (UK) on behalf of LycoRed (Israel) for the authorisation of an oleoresin derived from lycopene-rich tomato as a novel food ingredient to be added in a range of foodstuffs at levels up to 500mg/kg.

Lycopene is a carotenoid with antioxidant properties. LycoRed's novel food ingredient consists of an oleoresin, which is the solvent extract produced from the pulp of lycopene-rich tomatoes. This extract contains 5-15% lycopene, with smaller amounts of other carotenoids. The same extract is currently used in the EU as a food colour (E160d, usually in a more concentrated form) and in food supplements.

At its November meeting, the ACNFP noted that the applicant had provided information on previous human exposure to tomatoes and tomato products, but not the oleoresin. Members considered that the data provided were incomplete and of limited value to support the application. The Committee also highlighted the lack of data regarding the potential intake by children. Members also expressed concerns about the use of the oleoresin in foodstuffs such as ice cream, cakes or biscuits, and indicated that any potential health benefits provided by the addition of the oleoresin could be compromised by the presence of sugar and fats in such products. Members suggested that healthy eating patterns could therefore be unnecessarily disrupted.

The Committee reviewed the toxicological data provided on the product. Members were concerned that two older batches of Lyc-O-Mato® 5% were positive in the skin irritation test and noted the suggestion that this issue had been resolved by changes to the production process. However, they recommended that this hypothesis should be tested by repeating the test with more recent batches of the product. Members also found that there was little information on the skin sensitisation study. Regarding the semi-chronic toxicity study, the Committee requested that detailed histopathological data be provided to confirm the significance of the increase in lung weights that was observed for female rats in the upper dose groups. The Committee also felt that statements on the absence of tomatin and potentially allergenic proteins should be backed up by analytical data, and that the applicant should provide further information on projected intake of the ingredient by specific population groups that might have a higher than average intake.

The Committee postponed the completion of its assessment to allow the applicant to respond to these points.

1.5 Chia (Salvia *hispanica* L.)

This application for the use of chia seed, a summer annual herbaceous plant belonging to the mint family, as an ingredient in multigrain breads was described in the 2003 Annual Report. Following a request from the Committee the applicant submitted additional information regarding quality control and allergenic potential.

The Committee accepted the additional information concerning quality control and agreed that the measures were adequate to effectively monitor and control moisture levels during transport.

With regard to potential allergenicity the Committee highlighted the findings of a study that identified two sesame allergic individuals among a group of nut allergy sufferers who reacted to chia and proposed additional studies. The applicant indicated that it was not feasible to undertake specific studies to determine the incidence of cross-reactivity between chia and sesame or other allergenic seeds such as mustard. Instead, the applicant suggested that multigrain bread containing chia should be labelled as unsuitable for people with seed allergy. The Committee accepted that this would minimise the risk, but were concerned that precautionary labelling could restrict the availability of products to allergy sufferers when there was no firm evidence that this restriction was justified. However, the Committee noted that the issue of consumer choice falls outside the scope of the novel foods regulation. The Committee's opinion is attached at Appendix IV.

1.6 Juices and nectars with added phytosterols

The ACNFP was asked to consider an application from Coca-Cola s.a. for fruit juices and nectars with added phytosterols.

Over the last four years the ACNFP has considered a number of applications for foods fortified with phytosterols. In the course of these considerations Members expressed concern that the increasing number of phytosterol fortified products may lead to over-consumption of the ingredient and affect vitamin status. Members had also raised concerns that some products would be attractive to children. Other Member States raised similar concerns and, following an assessment of the risk of high level consumption by the Scientific Committee on Food, the need for a risk management strategy was highlighted. This culminated in the implementation of a risk management strategy (Regulation (EC) No 608/2004) in early 2004 to minimise the possibility of the over-consumption of plant sterols and to ensure that all products are labelled to prevent consumption of products containing phytosterols by individuals who do not have raised blood cholesterol levels or those for whom excessive consumption could be dangerous.

Following the adoption of this regulation, a number of applications have been approved under the novel foods regulation and a number of foods containing plant sterols are now on the market. The number of companies selling these products is also increasing as manufacturers of the plant sterols gain "substantial equivalence".

The applicant proposes to use a phytosterol ingredient supplied by Cargill Inc who have recently gained approval under the novel foods regulation for its use in a range of other foods, not including fruit juices and nectars.

Given that the ingredient is already authorised, and there is now a clearly defined risk management strategy, Members were asked to consider whether the data supplied was adequate to determine whether the novel ingredient complies with the criteria for acceptance under the novel foods regulation.

Members noted that the ingredient was specially prepared as micro-sized particles for addition to juices and nectars by a physical process and requested clarification as to the nature of the particles and the implications of this process.

The Committee indicated that they remained concerned about potential consumption by groups for whom the product was not intended, particularly children and teenagers. Members were of the opinion that the potential for inappropriate consumption was likely to be greater with a product of this type than with a low fat spread made with added phytosterols. The Committee further drew attention to the proposed sale of the phytosterol containing fruit juices in 250ml containers, which could be particularly attractive to children.

2 Substantial equivalence applications submitted to the UK competent authority

2.1 Noni juice from Hawaii

An application from Neways for an opinion on equivalence was described in the 2003 Annual Report. Following requests for additional information from the Committee, the applicant provided data on the composition of the fruit from different geographical regions. The Committee accepted these data and its opinion on equivalence is attached at Appendix V. The applicant must formally notify the European Commission when they first market the product.

2.2 Glucosamine

The ACNFP was asked to consider an application from the American company Cargill Inc who requested an opinion on substantial equivalence for their glucosamine HCl derived from *Aspergillus niger* with the existing glucosamine HCl ingredient derived from shellfish.

Glucosamine is a naturally occurring amino sugar, which is found largely in cartilage. Glucosamine dietary supplements from shellfish waste are widely available in Europe to support health in joints. The applicant proposed to market a glucosamine hydrochloride (Regenasure™) derived from an alternative source, the fungus *A. niger*. After acid hydrolysis of the non-genetically modified *A. niger* biomass at high temperature, glucosamine HCl is extracted using the same process used for the production of shellfish glucosamine HCl. In both cases, the process results in a crystalline product of high chemical purity (≥98%).

The ACNFP considered the application at its March meeting and requested clarification on two main points. The ACNFP asked the applicant whether they intended to carry out routine tests to check the presence of ochratoxin A in their fungal glucosamine. It also requested further evidence that there is no potential risk of allergenicity in consuming glucosamine HCl from *A. niger*.

Cargill's answers to these comments were considered by the ACNFP at its May meeting. The Committee was satisfied that the presence of ochratoxin A would be monitored by routine tests during the production process. However, the ACNFP felt that the protein detection method used by Cargill to detect potential allergens was not adequate.

The applicant provided further information on the levels of protein in their fungal glucosamine HCl and this was considered by the ACNFP through a postal consultation in June 2004. The ACNFP was satisfied that these results showed the absence of potentially allergenic proteins in the novel ingredient.

The ACNFP therefore concluded that glucosamine HCl derived from *A. niger* was substantially equivalent to that derived from shellfish. This positive scientific opinion was sent to the applicant on the 5 August 2004 and can be found in Appendix VI. This opinion was issued on the basis that the fungal glucosamine HCl ingredient was to be used in the same way as glucosamine HCl derived from shellfish, namely in food supplements and products with particular nutritional uses (PARNUTS), respectively in accordance with the Directives 2002/46/EC and 89/398/EEC.

Cargill notified the European Commission of the placing on the market of their glucosamine on 6 August 2004.

2.3 Astaxanthin

The ACNFP considered US Nutra's application at its March meeting. US Nutra requested an opinion on the equivalence of astaxanthin-rich carotenoid oleoresin derived from *Haematococcus pluvialis* (Zanthin®) with *H. pluvialis* astaxanthin-rich algal meal which is already marketed in the EU. This was substantiated by comparing the composition of the oleoresin with its algal source and with the algal meal product currently available on the EU market.

Astaxanthin is a naturally occurring carotenoid found in salmon, pink shellfish, certain fruits and vegetables and the micro algae *H. pluvalis*. It is shown to have potent antioxidant properties. The applicant has developed a supercritical carbon dioxide extraction process to produce an astaxanthin-rich carotenoid oleoresin from *H. pluvialis*. This oleoresin was proposed as an ingredient for dietary supplements in capsule form.

The Committee requested clarification on the intended use and dosage of the novel ingredient, compared with the existing product. The applicant explained that it would advise their future customers to sell capsules containing US Nutra astaxanthin oleoresin at a maximum level of incorporation of 4mg, in line with the amount found in existing products.

At its May meeting, the ACNFP concluded its assessment and adopted a positive opinion on the equivalence of the US Nutra extract with the existing *H. pluvialis* algal meal produced by Astacarotene. A copy of this opinion can be found in Appendix VII.

2.4 Phytosterols (Triple Crown)

At its May meeting the ACNFP considered a request from Triple Crown AB (Sweden) for an opinion on substantial equivalence for free phytosterols with Unilever's phytosterol esters used in milk-type products and yoghurt-type products.

Unilever's plant sterol esters were authorised to be used in milk-type and yoghurt-type products under Commission Decision 2004/335/EEC. This application was described in the 2002 and 2003 Annual reports.

The Committee was content that Triple Crown had demonstrated the equivalence of their free phytosterols, to be used in yoghurt and milk-type products, with the existing phytosterol esters. The ACNFP recommended that Triple Crown's product complies with the EC specification on phytosterols. It also reminded the applicant that all the requirements of Regulation (EC) No 608/2004 concerning the labelling of foods and food ingredients with added phytosterols should be met.

This positive opinion was sent to the applicant in July 2004 see (Appendix VIII). The applicant must formally notify the European Commission when they first market the product.

2.5 Phytosterols (Cognis)

At its May meeting the ACNFP considered an application for an opinion on the equivalence of phytosterol esters manufactured by Cognis for use in a specified range of products, compared with phytosterol esters currently used in milk and yoghurt-type products, and in yellow fat spreads.

The applicant's case was based primarily on documentation showing that they had manufactured and supplied the phytosterol esters described in the applications from Unilever, which were authorised in 2000 and in 2004. The Committee informed the Secretariat that they were satisfied with the commercial documentation provided by the applicant. The Secretariat noted that this was the first UK application for an opinion on substantial equivalence that relied on commercial information to demonstrate that the applicant's product was the same one that was already on the market. In such cases, the Food Standards Agency would be primarily responsible for responding to applicants and it would continue to seek the Committee's advice on any relevant scientific or technical issues. The Committee was satisfied with the technical data that accompanied the request.

The Agency issued a positive opinion on 14 July 2004 and Cognis subsequently notified the European Commission of its intention to market their ingredient.

2.6 Saskatoon berries

At its meeting in May the ACNFP considered a submission received from Prairie Lane Ltd seeking an opinion on the substantial equivalence of saskatoon berries (*Amelanchier alnifolia* Nutt., Rosaceae). The applicant was of the view that the product should be treated as substantially equivalent to blueberries (*Vaccinium corymbosum* L., Ericaceae).

The applicant was of the view that, whilst equivalence could not be sought on the basis of genetic similarity, the phenotypic similarities of the two berries, together with a comparison of composition and intended use allow them to be considered substantially equivalent in the context of the novel foods regulation. The Committee acknowledged that saskatoon berries have a history of consumption in Canada and do not appear to present any safety concerns. However, they could not be considered substantially equivalent to blueberries as the two species are unrelated and their phytochemical compositions are very different. The Committee accepted that the nutritional profiles of the two berries are similar, but advised that any possible concerns over the safety of the berries would be centred on other components which clearly differ between the two types of berry. The Agency wrote to the applicant in May 2004 rejecting the application for an opinion on substantial equivalence (see Appendix IX).

Note: Towards the end of 2004, information came to light concerning the commercialisation of saskatoon berries in Finland, which began in 1996. After examining this information the Finnish authorities concluded that there is a significant history of consumption of the berries in Finland prior to May 1997, and that they cannot therefore be considered as "novel" for the purposes of the novel foods regulation. This conclusion has been notified to the Competent Authorities in the other Member States and it was agreed that the berries do not require authorisation under the regulation.

2.7 Noni juice (PINA)

The ACNFP considered a request for an opinion on equivalence from the Pacific Islands Noni Association (PINA) of noni juice (juice of *Morinda citrifolia* L.) produced by named companies on a number of Pacific islands. The applicant was of the view that their product could be regarded as substantially equivalent to the noni juice ingredient from Tahitian Noni International which was assessed under Regulation (EC) No 258/97 and authorised in June 2003 under Commission Decision

2003/426/EC.

PINA is a trade association comprising of a number of individual companies who produce noni juice. PINA acts as an umbrella organisation setting and maintaining standards and ensuring a consistent approach to the production of the products. The application was made on behalf of a number of producers operating to these standards, not all of whom were PINA members.

The Committee considered this application at its May and July meetings, where Members requested clarification regarding compositional analyses and quality assurance procedures and requested analyses to demonstrate the lack of undesirable substances.

The applicant addressed all the questions raised and the Committee was satisfied that the applicant provided enough data to demonstrate equivalence according to the criteria set out in Article 3(4) of Regulation (EC) No 258/97. A copy of the UK opinion on substantial equivalence is attached at Appendix X. The applicant companies must formally notify the European Commission when they first market the product.

3 Applications submitted to other Member States

3.1 GM maize line NK603

This maize line has been modified by the inclusion of a gene that confers resistance to the herbicide glyphosate (Roundup™). The Committee first looked at this maize line in 2003 when it was asked to consider a favourable initial assessment report from the Netherlands' Competent Authority. The Committee had no objections to this opinion, which covered the food use of ingredients derived from NK603 maize grain.

In February 2004 the Committee was asked to consider further information provided by the applicant (Monsanto) in response to Member States questions and an opinion from the European Food Safety Authority (EFSA) Scientific Panel on GMOs which concluded that NK603 maize is as safe as conventional maize. The Committee had no further concerns over the new information provided and was satisfied with the EFSA opinion.

Products from this maize line were authorised for use in the EU in October 2004.

3.2 GM maize line 1507

In February 2004 the Committee considered an initial opinion under Regulation (EC) No 258/97 from the Netherlands' Competent Authority for Maize 1507, an insect resistant and herbicide resistant GM maize line. The Committee had previously considered this maize line in September 2003 under Directive 2001/18/EC on deliberate release into the environment of GMOs.

The Committee did not agree with the positive initial opinion of the Netherlands' Competent Authority and raised a number of concerns regarding the specificity of expression of novel genetic material, toxicological information and potential allergenicity. This formed the basis of the UK Competent Authority's response to the Commission (see Appendix XI).

As the UK and some other Member States had raised reasoned objections to the Dutch opinion, the application could not be completed under the novel foods regulation and has now been transferred to the GM food and feed regulation, which came into force in April 2004.

3.3 Two leaf extracts from lucerne

In March 2004 the ACNFP considered an initial opinion from the French Competent Authority regarding a protein, mineral and vitamin (PMV) complex and a protein ingredient obtained from lucerne leaves that the French manufacturer Viridis proposed to use respectively as a food supplement and a food ingredient. The French Competent Authority had issued an unfavourable opinion for this application.

The PMV complex (PROLIVI) and the protein ingredient (RUBISCO) are obtained from the fractionation of leaf proteins from the same biomass of lucerne (*Medicago sativa* L.). The PMV complex has been given to children from developing countries, since 1992, in order to overcome their dietary deficiencies. The protein ingredient has functional emulsifying and foaming properties as well as dietary properties.

At its March meeting, the Committee generally agreed with initial opinion from the French Competent Authority. However, Members noted that heating the PMV complex at 90°C would not exclude the possible presence of bacterial spores in this ingredient and also considered that the presence of coumestrol, a phytoestrogen found in lucerne, was of concern due to possible consumption by small children. The Committee further noted that the applicant had not supplied details regarding the control of the suggested daily intake of 2.5g. Members also questioned whether the lucerne protein ingredient might be subject to the Food Additives Regulations by virtue of its intended use as an emulsifier. The Committee requested further details on the specification of this ingredient.

The Committee's opinion on this application was forwarded to the Commission in April 2004 (Appendix XII). Viridis is now expected to provide an answer on the French initial opinion and on the comments made by the UK and other Member States.

3.4 Insect resistant GM maize line MON 863

The Committee first evaluated this application in July 2003, as reported in the Annual Report for 2003. At the May 2004 meeting the Committee considered an opinion from EFSA's GMO panel on the MON 863 maize line. The Committee noted that additional details on the flanking sequences were insufficient for adequate characterisation of the insertion point and asked that the applicant provide additional sequence information. In response to these questions, the applicant did not provide any further sequence information. The company highlighted technical factors that would limit the usefulness of such data and argued that the data package, taken as a whole, provided adequate assurance of the safety of this maize line.

The Committee discussed the applicant's response at the July 2004 meeting and reviewed the complete dossier of information provided in support of this novel food application by post. As Professor Gasson was a member of the scientific panel on GMOs responsible for drafting the EFSA opinion on this application he did not contribute to the discussions or to the postal consultation.

In summary, Members noted that the molecular characterisation of MON 863 maize was generally satisfactory but was incomplete in one respect, as it left open the question whether any genes in the maize genome might have been disrupted by the insertion event. The applicant had not identified the precise site of insertion into the maize genome and the available data did not rule out the possibility that the inserted DNA was first coupled with mitochondrial DNA during the process of incorporation of the insert into the maize genome. This uncertainty had been acknowledged in the initial opinion from the German assessment body and more recently by EFSA's scientific panel on GMOs. These bodies concluded that this did not represent a safety concern and they advised that MON 863 maize is equivalent to conventional maize and is unlikely to have an adverse effect on human or animal health.

The Committee discussed this issue at length and stressed that complete characterisation of the insertion site should normally be provided for all GMOs, as indicated in the draft guidelines for safety assessment that were recently published by EFSA. In the specific case of MON 863 maize, the Committee concluded that the uncertainty about the insertion of mitochondrial DNA during the genetic modification was unlikely to influence the safety of food products derived from the maize.

The Committee took account of the other data showing that MON 863 maize exhibits no phenotypic differences other than the intended insect resistance traits, when compared with parental maize lines.

The Committee also noted the results of a 90-day toxicity study in rats and feeding studies in other animals. These studies were additional to the minimum data requirements for assessment of GM foods and did not identify any potential hazards. While providing some reassurance of safety, these studies did not provide evidence of a complete absence of risk. Nevertheless, taking the data as a whole, the Committee agreed with the conclusions reached by the EFSA GMO panel.

4 Notifications

4.1 DHA-rich oil from *Ulkenia sp*.

The ACNFP considered the notification sent by the company Nutrinova to the European Commission, in December 2003, regarding the marketing of a novel oil obtained from the microalga *Ulkenia sp* (DHA45 oil). This notification was supported by an opinion from the German Competent Authority that this ingredient is substantially equivalent to the novel Docosahexaenoic acid (DHA)-rich oil derived from the algal source *Schizochytrium sp* (DHA-Gold™). The application for the oil from *Schizochytrium* was described in the 2001, 2002 and 2003 Annual Reports. This oil was authorised as a novel food ingredient in June 2003 under Commission Decision 2003/427/EC.

At its February 2004 meeting, the ACNFP expressed reservations over the basis for the German opinion. The Committee noted that the information summarised in the opinion did not appear to be sufficient to support the substantial equivalence of the two oils. The Committee requested clarification on the number of samples used to calculate the average fatty acid levels in the two oils and on the use of statistical analysis to test for differences. The Committee finally questioned the premise that oils from two different algal species, neither of which has a history of food use, could be judged to be of equivalent safety based solely on an analysis of known lipid constituents.

Clarification was sought from the German Competent Authority, who indicated that the compositional values reported in their opinion were averages based on 3 samples each of the new and existing algal oils. Statistical analysis was not possible with these sample sizes. The German Competent Authority confirmed that the reference to a maximum intake for children of 0.5g of DHA per day was based on a recommendation from the US Food and Drug Administration, and clarified that this figure relates to the total intake of DHA and EPA from all sources.

Members were informed that a letter would formally be sent to the German Competent Authority reflecting the Committee's concerns about drawing conclusions from a basic analysis of nutrients in products from two different algal species, neither of which has a history of food use, and suggesting that substantial equivalence is not the appropriate route for authorisation of this product.

4.2 Noni juice: opinions on substantial equivalence from other Member States

As mentioned in the 2003 Annual Report, Morinda Inc (known as Tahitian Noni International) was granted approval to market its Tahitian noni juice under Commission Decision 2003/426/EC in June 2003. This approval was only given to the applicant company. However, where a novel food is "substantially equivalent" to a food already on the market, Regulation (EC) No 258/97 includes a provision for applicant companies to submit a notification to the European Commission. According to Article 3(4) of Regulation (EC) No 258/97, that simplified procedure applies to foods or food ingredients that "are substantially equivalent to existing foods or food ingredients as regards their composition, nutritional value, metabolism, intended use and the level of undesirable substances contained therein".

Since June 2003, the Commission has distributed a total of sixteen notifications from companies for the marketing of noni juice considered to meet the criteria for substantial equivalence. The table on page 16 provides details regarding these notifications:

Date of notification	Notifier/Product	Opinion prepared by
10 November 2003	NCT Nord Trading/"Noni Saft"	Germany
23 December 2003	Paracelsus Haus/Bula noni juice	Austria
24 December 2003	GSE Vertrieb/100% Cook Island noni juice	Germany
9 January 2004	Svane Trading ApS/Svane Tahiti Noni juice	Denmark
9 January 2004	Planta Naturdtoffe Vertriebsges m.b.H/"Noni Saft"	Austria
9 January 2004	Botanical Products International/FM Brenner GMBH/noni juice concentrate	Austria
1 March 2004	FM Network marketing GmbH/Indian noni with 10% grape juice concentrate	Austria
24 May 2004	G.D.I nv/Noni juice from Tahiti	Belgium
22 June 2004	Will & Co/Noni juice drink	Netherlands
22 June 2004	Tahiti Naturel EURL/Tahiti Natural	Denmark
12 July 2004	Svane Trading/"Noni saft	Germany
27 July 2004	Medicura AG, Little food GmbH and Naturana GmbH/Noni juice from the Cook Islands	Austria
3 August 2004	FM Network Marketing GmbH/100% Indian noni	Austria
10 August 2004	Xerion-Overseas/"Noni Saft"	Germany
16 August 2004	TICO CATALANA S.A./"SomaNoni"	Spain
13 October 2004	COSMOS-AN Europe BV/Noni Juice	Netherlands
14 October 2004	Noni HawaiiBV/Noni juice	Netherlands
9 November 2004*	Natures Products/Cook Island Noni	UK

* This was a technical notification where the "novel" product is accepted on the basis that the applicant company intends to market *exactly* the same product that has already received an authorisation decision under the novel foods regulation (see section 2.5).

5 Other issues considered by the ACNFP

5.1 European Food Safety Authority guidance for the risk assessment of genetically modified plants and derived food and feed

The EFSA GMO Panel published its draft guidance document for the risk assessment of genetically modified plants and derived food in April 2004. Written comments were invited via an online consultation.

The scope of the document is for the risk assessment of GM plants and/or derived food and feed submitted within the framework of Regulation (EC) No 1829/2003 or Directive 2001/18/EC. The draft guidance also applies to feed intended for animals not destined for food production. The document provides a framework for the full risk assessment of GM plants, including both the safety and environmental risk assessments and specific guidance on the presentation of the application. The scope of the draft guidance does not consider traceability, labelling or co-existence or extend to GM micro-organisms or animals.

The Committee considered EFSA's draft guidelines in relation to the issues previously raised by members on the safety assessment of GM foods. The Committee was generally content that these have been satisfactorily considered and the ACNFP Secretariat's response to the online consultation raised only minor issues seeking clarification of the text (Appendix XIII). EFSA published the final version of its guidance on 8 November 2004.

5.2 Novel foods research forward look

The Food Standards Agency currently funds two extensive research programmes (G01/G02) into issues that underpin the safety assessment of GM and novel foods. In July 2004 the Agency consulted the Committee on priorities for commissioning future research in these areas. This followed a research review meeting between the Agency and expert stakeholders. A draft report of the priorities identified at this review was circulated to Members.

Members agreed with the ideas discussed in the research review meeting and suggested additional areas of research including: polymorphisms among consumers of novel or GM foods; the validity of health effects attributed to probiotics and prebiotics; phytosterol intakes in non-target groups; and detection methods, other than those based on DNA or protein, for oils, starches, and sugars derived from GM crops.

6 Other activities

6.1 Substantial equivalence guidelines

At its February and March meetings, the Committee discussed the criteria that are used to decide whether a novel food or food ingredient qualifies for authorisation under the simplified procedure described in Article 3(4) and 5 of the Regulation (EC) No 258/97. There are no European guidelines for the application of this procedure and the Committee agreed that it would be useful to provide some guidance for potential applicants.

The Committee therefore drew up a short document setting out the information that should be provided to support a claim of "substantial equivalence" between a new product and its existing counterpart. These guidelines (Appendix XIV) cover the criteria defined in the regulation, namely that the new and existing foods should be equivalent in terms of their composition, nutritional value, metabolism, intended use and the level of undesirable substances.

6.2 ACNFP open meeting

The ACNFP held its fourth open meeting on 24 November 2004 in London.

The aim of the meeting was to give the general public the opportunity to meet the Committee and to discuss some of the issues that fall within the remit of the ACNFP.

The meeting was divided into four sections:

- a short introduction on the role of the ACNFP and how it links to other advisory committees on food safety and to the European Union.

- a discussion based on three recent case studies of novel foods, presented by Committee members, illustrated the novel foods process. This included smaller group discussions on selected questions related to the assessment of novel foods, such as the level of scrutiny of novel foods, the treatment of traditional foods from other parts of the world, and the degree of openness.

- a presentation on the GM food and feed regulation.

- an open discussion with tabled audience questions.

A Secretary's note of this meeting is available on the ACNFP pages of the FSA website.[1]

The Committee welcomed this opportunity to meet a range of stakeholders, and found the meeting to be very valuable.

6.3 ACNFP fact sheets

The ACNFP Secretariat issues a corporate brochure to interested parties. This brochure outlines the work of the Committee, and is in the form of a folder containing fact sheets.

During 2004, the Committee updated its fact sheets on cholesterol lowering foods (now titled "Cholesterol Lowering: Foods with added plant Sterols") and on Antibiotic Resistance Markers (ARMs) to reflect recent developments.

Copies of these fact sheets and an updated version of the fact sheet on ACNFP Members are available on the Committee's website or in hard copy from the Secretariat. *See page 21 for further details.*

[1] http://www.food.gov.uk/science/ouradvisors/novelfood/acnfpmeets/

7 Developments elsewhere

7.1 Review of the novel foods regulation

The novel foods regulation came into force in May 1997 and Article 14 requires the Commission to undertake a review of its operation after 5 years. In practice this review has been delayed while new legislation on GM foods has been developed. The European Commission published a consultation paper in July 2002 and organised a stakeholder meeting in January 2003 to discuss potential changes to the legislation.

There was no further progress during 2004 and discussions on revisions to the Regulation are expected to begin in 2005.

7.2 GM food and feed Regulation

A new EU Regulation on GM food and feed became effective in all Member States in April 2004. Regulation (EC) No 1829/2003 replaced the existing approval procedures for GM foods, as contained in the novel foods regulation, and introduced a harmonised procedure for the scientific assessment and authorisation of GMOs and GM food and feed. The Regulation requires labelling of all GM food and feed products produced from GMOs, regardless of the presence or absence of GM material in the final food or feed product.

Further details of this Regulation can be found on the FSA website at: http://www.food.gov.uk/gmfoods/

8 Contact points

For further information about the general work of the Committee or about specific scientific points concerning individual submissions (which have been made or are being made) contact in the first instance:

ACNFP Secretariat
Room 515B
Aviation House
125 Kingsway
London
WC2B 6NH

Tel: 020 7276 8595
Fax: 020 7276 8564

The Food Standards Agency website can be found at:
http://www.food.gov.uk

Information on the ACNFP can be found at:
http://www.food.gov.uk/science/ouradvisors/novelfood

Information can also be requested via e-mail at:
acnfp@foodstandards.gsi.gov.uk

9 References

1. Advisory Committee on Novel Foods and Processes. Annual Report 1989. Department of Health and Ministry of Agriculture, Fisheries and Food, 1990 (Available from the ACNFP Secretariat).

2. Advisory Committee on Novel Foods and Processes. Annual Report 1990. Department of Health and Ministry of Agriculture, Fisheries and Food, 1991 (Available from the ACNFP Secretariat).

3. Advisory Committee on Novel Foods and Processes. Annual Report 1991. Department of Health and Ministry of Agriculture, Fisheries and Food, 1992 (Available from the ACNFP Secretariat).

4. Advisory Committee on Novel Foods and Processes. Annual Report 1992. Department of Health and Ministry of Agriculture, Fisheries and Food, 1993 (Available from the ACNFP Secretariat).

5. Advisory Committee on Novel Foods and Processes. Annual Report 1993. Department of Health and Ministry of Agriculture, Fisheries and Food, 1994 (Available from the ACNFP Secretariat).

6. Advisory Committee on Novel Foods and Processes. Annual Report 1994. Department of Health and Ministry of Agriculture, Fisheries and Food, 1995 (Available from the ACNFP Secretariat).

7. Advisory Committee on Novel Foods and Processes. Annual Report 1995. Department of Health and Ministry of Agriculture, Fisheries and Food, 1996 (Available from the ACNFP Secretariat).

8. Advisory Committee on Novel Foods and Processes. Annual Report 1996. Department of Health and Ministry of Agriculture, Fisheries and Food 1997 (Available from the ACNFP Secretariat).

9. Advisory Committee on Novel Foods and Processes. Annual Report 1997. Department of Health and Ministry of Agriculture, Fisheries and Food 1998 (Available from the ACNFP Secretariat).

10. Advisory Committee on Novel Foods and Processes. Annual Report 1998. Department of Health and Ministry of Agriculture, Fisheries and Food 1999 (Available from ACNFP Secretariat).

11. Advisory Committee on Novel Foods and Processes. Annual Report 1999. Department of Health and Ministry of Agriculture, Fisheries and Food 2000 (Available from the ACNFP Secretariat).

12. Advisory Committee on Novel Foods and Processes. Annual Report 2000. Food Standards Agency 2001 – FSA/0013/0301 (Available from the ACNFP Secretariat).

13. Advisory Committee on Novel Foods and Processes. Annual Report 2001. Food Standards Agency 2002 – FSA/0553/0302 (Available from the ACNFP Secretariat).

14. Advisory Committee on Novel Foods and Processes. Annual Report 2002. Food Standards Agency 2003 – FSA/0824/0403 (Available from the ACNFP Secretariat).

15. Advisory Committee on Novel Foods and Processes. Annual Report 2003. Food Standards Agency 2004 – FSA/0919/0604 (Available from the ACNFP Secretariat).

10 Glossary

Allergenicity: The potential or ability of an allergen (usually a protein) to elicit an allergic response.

Allergenicity Screening: Process for identifying allergenicity.

Allergenic: Having the properties of an allergen (usually a protein).

Anaerobic: Ability to grow without air or requires oxygen-free conditions to live.

Antioxidant: A compound that can neutralize oxygen-free atoms in the body which could damage cells.

Aspergillus: A group of fungi including the common moulds.

Beta-carotene: An antioxidant that protects the cell against oxidative damage, which may lead to cancer. Beta-carotene can be converted into Vitamin A if needed.

Biosynthetic pathway: A process/sequence of building chemical compounds in the physiologic processes of living organisms.

Carotenoid: Photosynthetic pigments in plants and bacteria.

Clostridium: Variety of micro-organisms which produce spores able to survive under adverse conditions.

Cross reactivity: If someone reacts to one food (e.g. peanut) it is possible that they will react to another with a similar chemical structure (e.g. lupin).

Crystalluria: The excretion of crystals in the urine producing renal irritation.

Disaccharide: A carbohydrate composed of two sugar molecules.

Emulsify: Convert into an emulsion.

Fractionation: Separate by fractional distillation.

Genome: A complete set of chromosomes derived from one parent.

GM: Genetically Modified.

GMO: Genetically Modified Organism.

HACCP: Hazard Analysis Critical Control Point.

Herbicide: Substance toxic to plants and used to destroy unwanted vegetation.

Hybrid: Progeny of a cross between parents of a different genotype.

***In vivo*:** Within the body.

Isomaltulose: A reducing disaccharide composed of a glucose and fructose molecule.

Lipid: A substance which is insoluble in water but soluble in fat solvents such as alcohol.

Mitochondria: Rod-like bodies in the cells of the body which contain the enzymes necessary for the activity of the cell.

NOAEL: No observable adverse effect level.

Ochratoxin A: A mycotoxin which is a poisonous substance produced by a fungus.

Phytosterol esters: Compounds found in vegetable oil, seeds, nuts and coniferous trees that interfere with the absorption of cholesterol in the intestine due to their similar structure.

PINA: Pacific Islands Noni Association.

Polymorphism: Variation in a gene or its expression.

Polyunsaturated: Of or relating to long chain carbon compounds, especially fatty acids having two or more double bonds between carbon atoms. Food containing polyunsaturated fatty acids may help reduce blood cholesterol.

SCF: EC Scientific Committee on Food.

Sterol: Any of a group of naturally occurring steroid alcohols.

Toxicological: Of or relating to toxicology (the scientific study of poisons).

Unsaponifiable: A fat which cannot be hydrolysed by an alkali to form a soap and an alcohol.

Zeolite: A number of minerals consisting mainly of hydrous silicates of calcium, sodium and aluminium.

APPENDIX I

ACNFP – remit, membership and list of Members' interests, code of conduct and interactions with other committees

Remit

The Advisory Committee on Novel Foods and Processes is an independent body of experts whose remit is:

> *"to advise the central authorities responsible, in England, Scotland, Wales and Northern Ireland respectively on any matters relating to novel foods and novel food processes including food irradiation, having regard where appropriate to the views of relevant expert bodies"*

Officials of the Food Standards Agency provide the Secretariat. As well as formal meetings, the Committee organises workshops on specific topics related to its remit.

The interactions between the ACNFP and other independent advisory committees are outlined in Figure 1 (page 39).

Membership and Members' Interests

The membership of the Committee provides a wide range of expertise in fields of relevance in the assessment of novel foods and processes. A list of the membership during 2004, together with the names of the FSA assessors can be found overleaf.

In common with other independent advisory committees the ACNFP is publishing a list of its Members' commercial interests. These have been divided into different categories relating to the type of interest:

Personal:
a) direct employment or consultancy;
b) occasional commissions;
c) share holdings.

Non-personal:
a) fellowships;
b) support which does not benefit the member directly e.g. studentships.

Details of the interests held by Members during 2004 can be found on page 29.

A copy of the code of conduct for ACNFP members can be found on page 33.

MEMBERSHIP OF THE COMMITTEE DURING 2004

Chairman

Professor Mike Gasson BSc, PhD
Head of the Food Safety Science Division at the Institute of Food Research, Norwich.

Deputy Chairman

Professor Phil Dale BSc, PhD, CBiol FIBiol (Molecular Biologist/plant geneticist)
Leader of the Genetic Modification and Biosafety Research Group at the John Innes Centre.

Members

Jill Brand MPhil, FICSc (Consumer Representative)
Home economist.

Professor Ruth Chadwick BA, BPhil, DPhil (Ethicist)
Director of the ESRC Centre for Economic and Social Aspects of Genomics, Lancaster University.

Dr Hilary Close BSc, PhD, PG Dip (Consumer Representative)
Member of the Science and Technology Committee of the National Council of Women of Great Britain.

Neville Craddock MA, CSci, FIFST (Food Processing and Quality Assurance Expert)
Non-Executive Director of Law Laboratories Ltd and Independent Consultant.

Professor James Dunwell BA, MA, PhD (Plant Biotechnologist)
Professor of plant biotechnology, School of Plant Sciences, University of Reading.

Professor Gary Foster BSc, PhD (Molecular Biologist)
Professor in Molecular Plant Pathology, School of Biological Sciences, University of Bristol.

Dr John Fowler BVM&S, PhD, FATS, CBiol, FIBiol, FRCPath, FRCVS (Toxicologist)
Independent consultant and registered toxicologist with experience in pharmacology and pathology.

Dr Peter Lund BA, MA, DPhil (Plant Molecular Biologist)
Senior Lecturer, School of Biosciences, University of Birmingham.

Professor Alan Malcolm MA, DPhil, FIFST, FIBiol, CBiol, FRSC (Nutritionist)
Chief Executive Institute of Biology.

Dr Clive Meredith BA, MA, MSc, PhD (Toxicologist/Immunologist)
Head of Immunology at BIBRA International Ltd.

Professor Ian Rowland BSc, PhD (Nutritionist/Toxicologist)
Professor of Human Nutrition at the University of Ulster and Head of the Northern Ireland Centre for Diet and Health.

Professor John Warner MB ChB, MD, FRCP, FRCPCH, FMed, Sci (Allergenicity Expert)
Professor of Child Health, University of Southampton.

Dr Anthony Williams BSc, MB, BS, DPhil, FRCP, FRCPCH (Paediatrician)
Consultant Neonatal Paediatrician and Senior Lecturer at St George's Hospital Medical School, London.

FSA Assessors

Dr C Baynton	Food Standards Agency
Mr P Morgan	Food Standards Agency (Wales)
Ms E MacDonald	Food Standards Agency (Scotland)
Mr G McCurdy	Food Standards Agency (Northern Ireland)

ACNFP Members' interests during 2004

	Personal Interests		Non-personal Interests	
Member	**Company**	**Interest**	**Company**	**Interest**
Professor M Gasson (Chairman)	Novacta Biosystems Ltd	Shareholder	Various	IFR Food Safety Science Division industry-funded research projects
Professor P Dale (Deputy Chair)	John Innes Centre EU/United Nations Environment Program/United Nations Industrial Development Organisation Agriculture and Environment Biotechnology Commission	Salary Occasional Advisor Member	University of East Anglia University of Sheffield Various Societies, Institutes, Associations and Steering Groups Institute of Biology BBSRC/DEFRA/EU Rockerfeller Maize Biotechnology Research Programme	Honorary Professor Member Fellow Research Funding Member of Advisory Committee
Miss J Brand	None	None	None	None
Professor R Chadwick	Glaxo Smithkline	Occasional consultant	Food Ethics Council ESRC Eursafe Wellcome Trust MRC	Member Research Funding Member of Executive Committee Research Funding Member of DNA Banking Network Steering Committee
Dr H Close	None	None	None	None

ACNFP Members' interests during 2004 *(continued)*

	Personal Interests		Non-personal Interests	
Member	**Company**	**Interest**	**Company**	**Interest**
Mr N Craddock	Law Laboratories Ltd Various	Non-Executive Director Consultant on short-term projects	None	None
Professor J Dunwell	None	None	BBSRC/EU Biohybrids	Research Funding Studentship
Professor G Foster	BBSRC RAE Institute Assessment Exercise Science Panel BSPP/Blackwells Molecular Plant Pathology Adjucation Panel for Science & Technology R&D funding in Ireland Biotech/Molecular/Biomedical Enterprise Ireland	Member Editor-in-Chief Panel Member Panel Member	BBSRC/DEFRA/DfID/Gatsby Horticultural Research International Central Science Laboratories British Society of Plant Pathology Molecular Biotechnology	Research Funding Research Funding (PhD student support) Member Editorial Board
Dr J Fowler	Syngenta	Minimal shareholder	None	None
Dr P Lund	Celltech	Minimal shareholder	BBSRC Food Ethics Council	Departmental Research Member
Professor A Malcolm	Associated British Foods Unilever	Shareholder Shareholder	None	None
Dr C Meredith	None	None	Various	Departmental Commissioned Research

ACNFP Members' interests during 2004 *(continued)*

	Personal Interests		Non-personal Interests	
Member	**Company**	**Interest**	**Company**	**Interest**
Professor I Rowland	Colloides Naturels International	Consultant	Cerestar (Belgium) Vitacress Geest Yakult (UK)	Funded Research
	Cerestar	Consultant		
	Alpro foundation	Consultant	Valio (Finland) Alpro (Belgium) VK Muehlen (Germany) Biohit (Finland) Danone (France) Orafti (Belgium) ILSI Europe	Partners in EC funded Projects
	Halifax	Shareholder		
	Woolwich	Shareholder		
			Unilever UK Alpro Nicobrand	PhD Studentships
Professor J O Warner	Anaphylaxis Campaign	Trustee	UBC Pharma	Research
	British Society for Allergy and Clinical Immunology	Member	Merck	Research
			ILSI Europe	Editorial
	International Pediatric, Respiratory and Immunology Society	President	Novartis	Research

ACNFP Members' interests during 2004 *(continued)*

	Personal Interests		Non-personal Interests	
Member	**Company**	**Interest**	**Company**	**Interest**
Dr Anthony Williams	None	None	Rank Prize Funds	Sponsorship of college course
			Children Nationwide	Sponsorship of college course
			National Childbirth Trust La Léche League Baby Milk Action UK Association for Milk Banking Breastfeeding Network UNICEF(UK) Baby Friendly Initiative Inter-agency Group on Breastfeeding Monitoring (IGBM), Women & Children First (Trustee), HDA Mother and Child Nutrition Collaborating Centre, University of York	Voluntary Professional Adviser
			Various organisations	Member

A CODE OF CONDUCT FOR MEMBERS OF THE ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES (ACNFP)

Public service values

The Members of the ACNFP must at all times:

- observe the highest standards of impartiality, integrity and objectivity in relation to the advice they provide and the management of this Committee;

- be accountable, through the Board of the Food Standards Agency and Health Ministers, to Parliament and the public for its activities and for the standard of advice it provides.

The Board of the FSA and Health Ministers are answerable to Parliament for the policies and performance of this Committee, including the policy framework within which it operates.

Standards in Public Life

All Committee Members must:

- follow the Seven Principles of Public Life set out by the Committee on Standards in Public Life (page 36);

- comply with this Code, and ensure they understand their duties, rights and responsibilities, and that they are familiar with the function and role of this Committee and any relevant statements of Government policy. If necessary Members should consider undertaking relevant training to assist them in carrying out their role;

- not misuse information gained in the course of their public service for personal gain or for political purpose, nor seek to use the opportunity of public service to promote their private interests or those of connected persons, firms, businesses or other organisations; and

- not hold any paid or high profile unpaid posts in a political party, and not engage in specific political activities on matters directly affecting the work of this Committee. When engaging in other political activities, Committee Members should be conscious of their public role and exercise proper discretion. These restrictions do not apply to MPs (in those cases where MPs are eligible to be appointed), to local Councillors, or to Peers in relation to their conduct in the House of Lords.

Role of Committee Members

Members have collective responsibility for the operation of this Committee. They must:

- engage fully in collective consideration of the issues, taking account of the full range of relevant factors, including any guidance issued by the Food Standards Agency or Health Ministers;

- in accordance with Government policy on openness, ensure that they adhere to the Code of Practice on Access to Government Information (including prompt responses to public requests for information); agree an Annual Report; and, where practicable and appropriate, provide suitable opportunities to open up the work of the Committee to public scrutiny;

- not divulge any information which is provided to the Committee in confidence;

- ensure that an appropriate response is provided to complaints and other correspondence, if necessary with reference to the sponsor department; and

- ensure that the Committee does not exceed its powers or functions.

Individual members should inform the Chairman (or the Secretariat on his or her behalf) if they are invited to speak in public in their capacity as a Committee Member.

Communications between the Committee and the Board of the Food Standards Agency will generally be through the Chairman except where the Committee has agreed that an individual member should act on its behalf. Nevertheless, any Member has the right of access to the Board of the FSA on any matter that he or she believes raises important issues relating to his or her duties as a Committee Member. In such cases the agreement of the rest of the Committee should normally be sought.

Individual Members can be removed from office by the Board of the Food Standards Agency, if they fail to perform the duties required of them in line with the standards expected in public office.

The role of the Chairman

The Chairman has particular responsibility for providing effective leadership on the issues above. In addition, the Chairman is responsible for:

- ensuring that the Committee meets at appropriate intervals, and that the minutes of meetings and any reports to the Board of the Food Standards Agency accurately record the decisions taken and, where appropriate, the views of individual Members;

- representing the views of the Committee to the general public; and
- ensuring that new Members are briefed on appointment (and their training needs considered), and providing an assessment of their performance, on request, when Members are considered for re-appointment to the Committee or for appointment to the board of some other public body.

Handling conflicts of interests

The purpose of these provisions is to avoid any danger of Committee Members being influenced, or appearing to be influenced, by their private interests in the exercise of their public duties. All Members should declare any personal or business interest that may, or may be perceived (by a reasonable member of the public) to, influence their judgement. A guide to the types of interest that should be declared can be found on page 26 of this report.

(i) Declaration of interests to the Secretariat

Members of the Committee should inform the Secretariat in writing of their current personal and non-personal interests, when they are appointed, including the principal position(s) held. Only the name of the organisation and the nature of the interest are required; the amount of any salary etc. need not be disclosed. Members are asked to inform the Secretariat at any time of any change of their personal interests and will be invited to complete a declaration form once a year. It is sufficient if changes in non-personal interests are reported in the annual declaration form following the change (non-personal interests involving less than £1,000 from a particular company in the previous year need not be declared to the Secretariat).

The register of interests should be kept up-to-date and be open to the public.

(ii) Declaration of interest and participation at meetings

Members of the Committee are required to declare any direct interests relating to salaried employment or consultancies, or those of close family members,[1] in matters under discussion at each meeting. Having fully explained the nature of their interest the Chairman will, having consulted the other Members present, decide whether and to what extent the member should participate in the discussion and determination of the issue. If it is decided that the Member should leave the meeting, the Chairman may first allow them to make a statement on the item under discussion.

[1] Close family members include personal partners, parents, children, brothers, sisters and the personal partners of any of these.

Personal liability of Committee Members

A Committee Member may be personally liable if he or she makes a fraudulent or negligent statement which results in a loss to a third party; or may commit a breach of confidence under common law or a criminal offence under insider dealing legislation, if he or she misuses information gained through their position. However, the Government has indicated that individual Members who have acted honestly, reasonably, in good faith and without negligence will not have to meet out of their own personal resources any personal civil liability which is incurred in execution or purported execution of their Committee functions save where the person has acted recklessly. To this effect a formal statement of indemnity has been drawn up.

THE SEVEN PRINCIPLES OF PUBLIC LIFE

Selflessness
Holders of public office should take decisions solely in terms of the public interest. They should not do so in order to gain financial or other material benefits for themselves, their family, or their friends.

Integrity
Holders of public office should not place themselves under any financial or other obligation to outside individuals or organisations that might influence them in the performance of their official duties.

Objectivity
In carrying out public business, including making public appointments, awarding contracts, or recommending individuals for rewards and benefits, holders of public office should make choices on merit.

Accountability
Holders of public office are accountable for their decisions and actions to the public and must submit themselves to whatever scrutiny is appropriate to their office.

Openness
Holders of public office should be as open as possible about all the decisions and actions that they take. They should give reasons for their decisions and restrict information only when the wider public interest clearly demands.

Honesty
Holders of public office have a duty to declare any private interests relating to their public duties and to take steps to resolve any conflicts arising in a way that protects the public interests.

Leadership
Holders of public office should promote and support these principles by leadership and example.

Different types of interest

The following is intended as a guide to the kinds of interests that should be declared. Where Members are uncertain as to whether an interest should be declared they should seek guidance from the Secretariat or, where it may concern a particular product which is to be considered at a meeting, from the Chairman at that meeting. **If Members have interests not specified in these notes but which they believe could be regarded as influencing their advice they should declare them.** However, neither the Members nor the Secretariat are under any obligation to search out links of which they might reasonably not be aware. For example, either through not being aware of all the interests of family members, or of not being aware of links between one company and another.

Personal Interests

A personal interest involves the Member personally. The main examples are:

- **Consultancies and/or direct employment:** any consultancy, directorship, position in or work for the industry or other relevant bodies which attracts regular or occasional payments in cash or kind;

- **Fee-paid work**: any commissioned work for which the Member is paid in cash or kind;

- **Shareholdings**: any shareholding or other beneficial interest in shares of industry. This does not include shareholdings through unit trusts or similar arrangements where the Member has no influence on financial management;

- **Membership or affiliation** to clubs or organisations with interests relevant to the work of the Committee.

Non-Personal Interests

A non-personal interest involves payment which benefits a department for which a Member is responsible, but is not received by the Member personally. The main examples are:

- **Fellowships**: the holding of a fellowship endowed by industry or other relevant body;

- **Support by industry or other relevant bodies**: any payment, other support or sponsorship which does not convey any pecuniary or material benefit to a Member personally, but which does benefit their position or department e.g.:

  (i) a grant for the running of a unit or department for which a Member is responsible;

(ii) a grant or fellowship or other payment to sponsor a post or a member of staff or a post graduate research programme in the unit for which a Member is responsible (this does not include financial assistance for undergraduate students);

(iii) the commissioning of research or other work by, or advice from, staff who work in a unit for which a Member is responsible.

Members are under no obligation to seek out knowledge of work done for, or on behalf of, industry or other relevant bodies by departments for which they are responsible, if they would not normally expect to be informed. Where Members are responsible for organisations which receive funds from a very large number of companies involved in that industry, the Secretariat can agree with them a summary of non-personal interests rather than draw up a long list of companies.

Trusteeships: any investment in industry held by a charity for which a Member is a trustee. Where a Member is a trustee of a charity with investments in industry, the Secretariat can agree with the Member a general declaration to cover this interest rather than draw up a detailed portfolio.

DEFINITIONS

For the purposes of the ACNFP 'industry' means:

- Companies, partnerships or individuals who are involved with the production, manufacture, packaging, sale, advertising, or supply of food or food processes, subject to the Food Safety Act 1990;

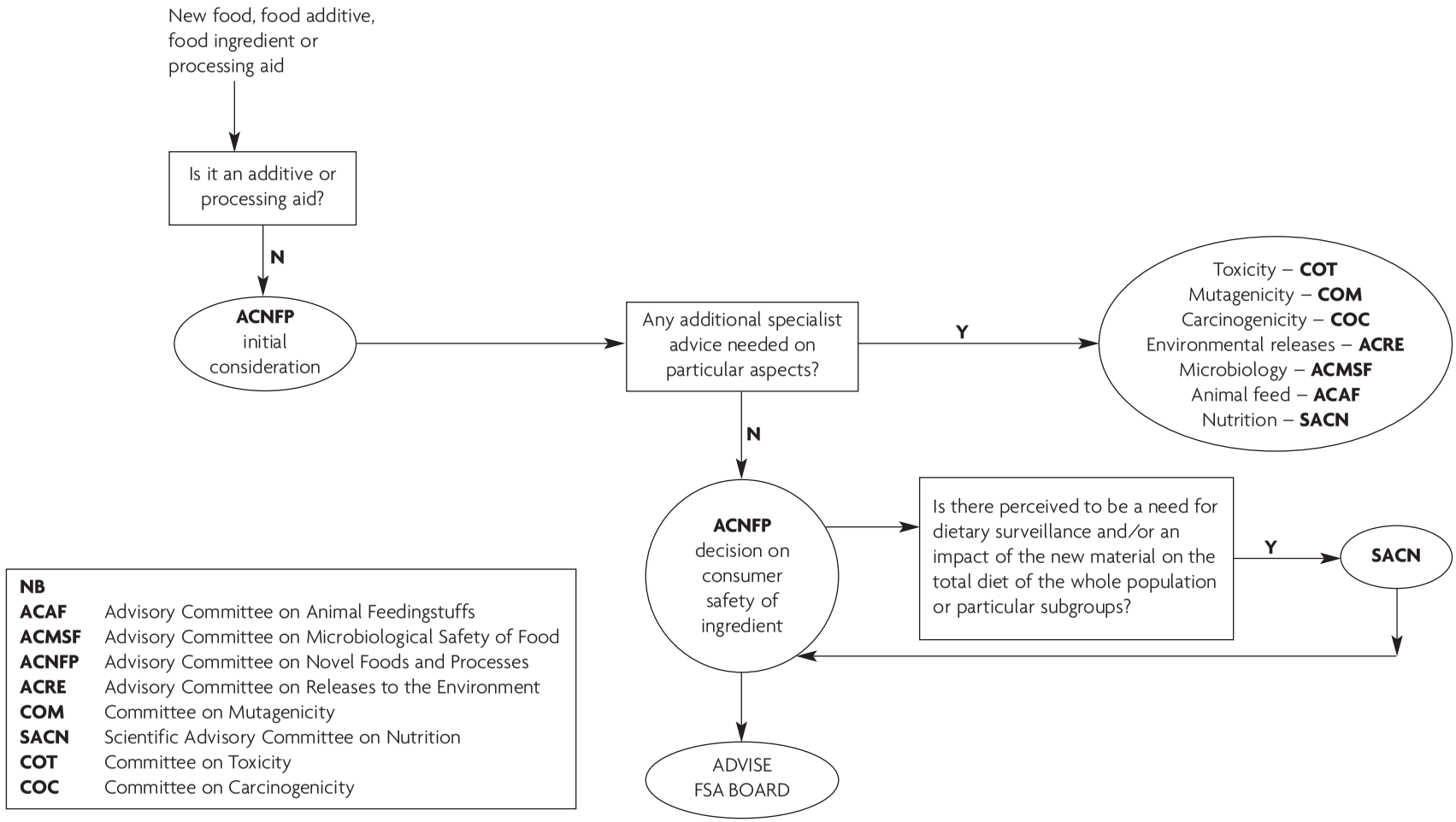
- Trade associations representing companies involved with such products;

- Companies, partnerships or individuals who are directly concerned with research, development or marketing of a food product which is being considered by the Committee.

'Other relevant bodies' refers to organisations with a specific interest in food issues, such as charitable organisations or lobby groups.

In this Code 'the Secretariat' means the Secretariat of the ACNFP.

Figure 1: Relationship of ACNFP with other expert committees involved in the assessment of food safety



APPENDIX II

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Opinion on an application under the novel fods regulation for Lycopene from *Blakeslea trispora*

Applicant	Vitatene
Responsible person	Dr Rodríguez-Otero
EC Classification	2.2

Introduction

1. An application was submitted by Vitatene to the UK Competent Authority for authorisation of lycopene derived from the fungus *Blakeslea trispora* for use as a novel food ingredient.

2. Lycopene ($C_{40}H_{56}$) is an aliphatic branched hydrocarbon with a molecular weight of 536.9 Daltons. It exists predominantly in the trans- form and is a red crystalline powder soluble in fats and organic solvents, but virtually insoluble in water, methanol or ethanol.

3. Solvent extracted lycopene from tomatoes is approved for use as an additive (E160d) and is used in dietary supplements and as an ingredient (food colour) in a range of foods. Synthetic lycopene is also used as a dietary supplement outside the EU, but is not permitted for use as a colour additive. *Blakeslea trispora* is a fungus found on a number of tropical plants, and strains of *B. trispora* are able to synthesise large quantities of carotenoids. Following the publication of a positive opinion from the SCF in 2001 β-carotene from *B. trispora* was approved for food additive use. Although lycopene *per se* has a history of consumption, and is produced using the same biosynthetic pathway as β-carotene, the organism has not hitherto been used for production of lycopene sold in the EU and the product requires authorisation under regulation (EC) 258/97 before it can be marketed.

I. Specification of the novel food

Information on this aspect is provided on pages 1 – 6 of the Application dossier

4. The applicant intends to market lycopene from *B. trispora* as a nutritional food ingredient. The purified, crystalline lycopene is dissolved in high oleic sunflower oil, supplemented with tocopherol to minimise oxidation. Tocopherol is added at levels consistent with those specified in the relevant food additives directive 95/2/EC. The Novel Food (NF) will be available in this oil suspension form (5% and 20%) only.

5. Detailed compositional analyses of the NF are given in the Application dossier for these analyses the company has tested both crystalline lycopene and oil suspensions. The Applicant's specification of the novel food states that it should be not less than 95% lycopene of which at least 90% is trans-lycopene. The remainder comprises of a number of low level contaminants, such as the extraction solvent, isobutyl acetate (not greater than 1%), sulphated ash (not greater than 1%) and subsidiary colouring matters (not greater than 5%). This company's specification was exceeded in each of three non-consecutive, representative lots described in the application.

   Discussion: *The Committee was satisfied with the specification of the novel food.*

II. Effect of the production process applied to the novel food

Information on this aspect is provided on pages 5, 7-14 of the Application dossier

6. Lycopene from *B. trispora* is obtained by the co-fermentation of 2 sexual mating types of the fungus, obtained using classical strain selection techniques to increase the efficiency of lycopene production. The strains used are the same as those approved for the production of β-carotene. The mating types are stable and are preserved and maintained using GLP methods and are deposited in a culture collection.

7. Fermentation of the fungi to produce lycopene is a two-stage process. Flasks are inoculated with each of the mating types, and grown under controlled conditions. Once vegetative growth is established, the contents of the flasks are individually transferred asceptically to larger growth tanks containing sterile medium. Once sufficient cell mass has accumulated the strains are transferred asceptically into another tank where co-fermentation commences. It is at this point that the fungi start to produce lycopene. The process is further controlled by the addition of imidazole which inhibits the formation of carotene.

8. After completion of the fermentation process, lycopene rich biomass is subject to an initial purification process using isopropyl alcohol, which removes any oils and other lipophilic substances. The residue is evaporated to dryness, milled and extracted with isobutyl acetate. The resulting enriched solvent is separated and concentrated by vacuum distillation. The lycopene is then crystallised. Due to its susceptibility to oxidation the lycopene is crystallised under nitrogen. The crystalline lycopene is dissolved in high oleic acid sunflower oil containing tocopherol (1%) and diluted in accordance with the desired specification. The purification and extraction processes are identical to those used in the production of beta-carotene from *B. trispora*, which have been examined and

cleared by the SCF. Each batch of the final product is assayed to check compliance with the specification Application dossier Section 1.e.

9. The applicant has supplied data indicating that in comparison with lycopene from other sources, lycopene from *B. trispora* is predominantly present in the trans- form (at least 90%). The data also indicates that the purity of the fungal lycopene is comparable with synthetic lycopene (Application dossier Table II c-1).

10. The applicant has demonstrated that the NF (20% oil suspension) is stable for a period of at least two years when stored at 5°C. Other studies demonstrate that lycopene (5% and 20% oil suspension) can be stored in sealed containers for at least 6 months at a range of temperatures (3°C, 25°C and 40°C) with no appreciable deterioration in product quality. In all cases the tests took place in conditions conducive to oxidation as, although the NF was sealed in bottles, the applicant did not sparge with nitrogen.

Discussion: *The Committee was satisfied that the production process is controlled and that the in-process monitoring steps are appropriate to ensure a safe and consistent product, that does not deteriorate during storage. The Committee accepted clarification from the applicant that consumption of the novel food in a dietary supplement form did not raise levels of exposure to the extraction solvent, isobutyl acetate to levels that would be toxicologically significant.*

III. History of the organism used as a source of the novel food

Information on this aspect is provided on pages 15 – 17 of the Application dossier

11. The applicant has based previous dietary exposure to *B. trispora* on its use as a source of β-carotene, noting that the safety of the organism was assessed by the SCF (2000) and the Joint Expert Committee on Food Additives (JECFA) (2001). The SCF concluded that, based on the information supplied, the organism is non-pathogenic and non-toxigenic. A subsequent 28-day oral feeding study using Wistar rats, Jonker (2000) (see also Section XIII) also demonstrated that the organism was both non-toxigenic and non-pathogenic.

12. JECFA concluded that β-carotene from *B. trispora* is acceptable for food additive use, providing that it met the specification of its synthetic counterpart. The applicant is of the view that this finding is consistent with their view that the source organism is safe.

13. The applicant also carried out mycotoxin assays on each of three non-consecutive batches to determine whether aflatoxin B1, Mycotoxin T2, ochratoxin and zearalenone were present. The results, for both crystalline and oil suspended lycopene, were all negative.

Discussion: *The Committee was reassured that the SCF assessment of the use of the source organism in the production of beta-carotene provided reassurance that there was a history of safe food use. The Committee also noted the similarity of the production process for production of the novel food would not give raise to any additional concerns.*

IX. Anticipated intake/extent of use of the novel food

Information on this aspect is provided on pages 21-27 of the Application dossier

14. The applicant intends to use the NF as a nutritional food ingredient. In addition to its use in dietary supplements, the ingredient will be used in a range of foodstuffs, including fat spreads, milk products and confectionery. A full list of the proposed uses is given in the Application dossier (Table IX a-1).

15. In order to predict the intake of the NF the applicant has used the most up to date information available from UK dietary surveys. The applicant has used proposed maximum use levels for **all** foods described above to predict potential intake. In order to compare the data over a 7-day period across a number of different surveys that target different sub-groups of the UK population, the applicant has applied a weighting factor. The UK CA sought the views of experts in the Food Standards Agency who were satisfied with the validity of the methodology.

16. The applicant has used dietary intake data for children (1.5–4.5), young people (4-10), male and female teenagers and male and female adults. Given that the proposed range of foodstuffs is wide, the applicant notes that the percentage of potential users was high amongst all age groups (>98%).

17. The intake estimates are summarised below. The largest consumers of the NF on an absolute basis are predicted to be male adults, whereas children have the highest predicted intakes on a body weight basis. These figures are likely to overestimate actual consumption, as they are based on the assumption that consumers always select foods that are fortified at the maximum level.

	ESTIMATED DAILY INTAKE			
Population Group (age)	Mean (mg)	97th %tile (mg)	Mean (μg/kg bw)	97th %tile (μg/kg bw)
Children (1½-4½)	0.22	0.65	15.1	44.9
Young People (6-11)	0.37	0.93	14.6	36.0
Teenager (F) (11-18)	0.40	1.02	7.6	20.6
Teenager (M) (11-18)	0.42	1.18	7.9	23.8
Adult (F) (16-64)	0.46	1.23	7.4	21.0
Adult (M) (16-64)	0.60	1.68	8.1	22.6

18. Based on the available intake data the applicant notes that the highest amount of lycopene from a food source would be obtained by consumption of fortified soups and soup mixes.

19. The applicant also intends to market the NF in supplement form at levels up to 20mg per day. Supplements containing lycopene from other sources are currently on the market in the EU, and it is likely that the NF would replace those already being consumed and overall consumption levels would not increase. In contrast, incorporation of lycopene into foods would result in additional intake.

20. The applicant has used the most recent adult dietary survey data available, however the Food Standards Agency is able to make estimates of intake based on a 2001 survey of British adults, which is not currently in the public domain in a form that the applicant could use to assess consumption of their product. Analyses of these data that confirm the applicant's consumption estimated are similar to those obtained with the newer survey data.

    Discussion: *As the proposed levels of incorporation were low the Committee was content that the intended use of the product did not give any cause for concern, based on scientific information currently available.*

X. Information from previous human exposure to the novel food or its source

Information on this aspect is provided on pages 28-30 of the Application dossier

21. Lycopene is a normal constituent of the diet in a number of red fruits and vegetables such as tomatoes and watermelon. Levels of lycopene in tomato are dependent both on the species of tomato

and the degree of ripening but are generally in the range 3.1-7.7 mg/100g.

22. The applicant highlighted a 1996 UK study that indicated that consumption of a lycopene-rich diet would lead to consumption of 1.03mg/person/day lycopene. These results are similar to levels seen in Finland (0.70 and 0.87 mg/day for females and males respectively).

23. However the applicant also highlighted other studies that show that intake of lycopene outside the EU shows markedly varied levels of consumption. The applicant has summarised a number of North American dietary surveys that reinforce the European findings that consumption of lycopene is intrinsically varied and dependent on dietary preference. Consumption of lycopene in North America indicates a large variation dependent upon method of data collection, however in all cases mean levels were significantly higher than those seen for UK subjects. A USDA study showed that mean lycopene intake for the general US population was 4.7mg/day however a number of other dietary surveys indicate that consumption could be as high as 25.2mg/person/day.

24. The Applicant also notes that there are no reliable consumption figures available for the current consumption of lycopene in dietary supplement form despite such products being freely available in Europe and the North America.

Discussion: *The Committee was reassured that lycopene has a history of consumption in the EU, albeit from a different source. The Committee noted that, in addition to its presence in fresh fruit and vegetables, dietary supplements containing lycopene extracted from tomatoes at levels in excess of 20mg were widely available in the UK.*

XI. Nutritional information on the novel food

Information on this aspect is provided on pages 31-33 of the Application dossier

25. The applicant is of the view that, although the source of lycopene is novel, the nutritional value of the novel food is unchanged when compared to existing lycopene. Other constituents of the novel food (high oleic acid sunflower oil and tocopherol) will have a negligible impact on the nutritional value of the lycopene oil suspension as they are relatively common in the diet.

26. Lycopene is an effective antioxidant, and these antioxidant properties are perceived to be primarily responsible for the potential health benefits of dietary carotenes.

Discussion: *The Committee was reassured that altering the source of the novel food would not affect its nutritional value.*

XII. Microbiological information on the novel food

Information on this aspect is provided on pages 34-35 of the Application dossier

27. Microbiological information supplied by the applicant indicates that, three non-consecutive batches had no detectable moulds, yeast, *Salmonella* or *Escherichia coli.* These findings applied to both the crystalline lycopene, and oil suspension (5% and 20% forms).

    Discussion: *The Committee was content with the microbiological data supplied, but requested further information from the applicant to demonstrate the absence of the anaerobic spore forming pathogen Clostridium botulinum. The applicant was able to supply this information, and the Committee was satisfied that the absence of this organism from the final product could be demonstrated.*

XIII. Toxicological Information on the Novel Food

Information on this aspect is provided on pages 36-57 of the Application dossier

28. The applicant presented a number of toxicological studies on both the novel food and the source organism. The applicant has noted that the NF is chemically comparable to others on the market (Application dossier Table 2.c-1) and has therefore included toxicological studies on lycopene products from other manufacturers as supporting data.

Summary of studies

29. The applicant assessed the sub-chronic toxicity of the source of the novel food by testing the lycopene-rich biomass extracted from *B. trispora*. Supplementary information to demonstrate the safety of the source organism has been supplied from an independent scientist, the SCF and JECFA. A 90-day oral toxicity study has been carried out on the NF (20% oil suspension).

30. The applicant also highlighted details of acute, sub-chronic and chronic, carcinogenicity, mutagenicity and genotoxicity, reproductive toxicity trials and human safety data for lycopene from other sources. Developmental toxicity investigations were carried out on two US lycopene products, whilst human safety data were mostly based on high levels of consumption of commonly available lycopene-rich foods.

Lycopene biomass (Application dossier p37)

31. Lycopene-rich biomass obtained under the fermentation conditions described in section II was used in a sub-chronic toxicity study. Four groups of 40 rats (20/sex) were assigned. The first formed a control group whilst the other three received lycopene biomass at levels of 0.1, 0.3 or 1% of the total diet. These percentages corresponded to

daily doses of 90, 272 and 906 mg/kg body weight in males and 87, 260 and 868 mg/kg bodyweight in females respectively. The lycopene-enriched diet was administered for a period of 28 days following which the animals were sacrificed.

32. Clinical observations, neurobehavioural observations, growth, food consumption and food conversion efficiency were assessed throughout the study and haematology, clinical chemistry, organ weights and macroscopic and microscopic examinations were carried out at necropsy.

33. No treatment related differences were found in mean body weights and relative/absolute organ weights between the control and treatment groups. Food consumption and food conversion efficiency were also not adversely affected by the treatment. No treatment related clinical signs or neurotoxic indications were found as a result of the lycopene biomass administration. These were assessed using neurobehavioural observations and motor activity assessments.

34. Haematological measurements showed a statistically significant decrease in mean corpuscular volume and prothrombin time in the high dose male group only. However no significant changes were noted for other red blood cell groups, coagulation variables, white blood cell counts, packed cell volume or haemoglobin concentrations and the authors considered the decrease in mean corpuscular volume as an incidental finding and of no toxicological significance. The decrease in prothrombin times was found to be small (6%) and within the limits of historical controls.

35. No adverse effects were noted in the clinical chemistry variables and macroscopic and microscopic examinations at necropsy revealed no treatment related changes except a statistically significant decreased incidence of increased hyaline droplet nephropathy in the high dose male group. Again, the authors of the study attached no toxicological significance to this finding.

Toxicological assessment of *B. trispora* (Application dossier p40)

36. The two mating strains of *B. trispora* are stable cultures that are preserved under conditions that adhere to good manufacturing practices. The strains are considered to be non-toxigenic and non-pathogenic on the basis of 28-day oral feeding study described above. The applicant also notes that *B. trispora* is formally classified in Germany as "risk group 1", organisms that pose no risk for humans and vertebrates.

37. The production of lycopene by *B. trispora* is an intermediary of the beta-carotene synthetic pathway and the SCF considered the use of *B. trispora* as a source of beta-carotene as acceptable. The Committee concluded that the "source organisms and the

production process yielded no grounds to suppose that the final crystalline product, beta-carotene, differs from the chemically synthesised beta-carotene used as a food colourant" (SCF, 2000)

Final Product (Application dossier p38)

38. A 90-day oral toxicity study was carried out to assess the toxicity of the 20% lycopene oil suspension in male and female Wistar rats. Groups of 20 rats received a diet containing 0, 0.25, 0.5, or 1.0 % lycopene in the form of a sunflower oil suspension. These percentages corresponded to daily doses of 0, 145 291 and 586 mg/kg bodyweight for males and 0, 156, 312 and 616 mg/kg bodyweight for females.

39. The animals were monitored for viability, clinical signs of toxicity, body weights and food consumption. Prior to necropsy, neurobehavioural testing and ophthalmoscopic examinations were performed and blood and urine analyses were obtained. Following necropsy, gross and histopathological examinations of various tissues were performed and organ weights recorded.

40. A pink discolouration of the fur was noted in all animals in the high dose group and many in the mid-dose group. This was attributed to the direct contact of the animals to the red staining lycopene mixture in the diet. No adverse effects were noted from the examinations described above and as a result the no observed effect level (NOAEL) was set at 1% in the diet. This was equivalent to a dose of 601mg/bodyweight per day, averaging the doses received by the male and female groups.

41. The genotoxicity of a 20% cold water dispersal of lycopene from *B. trispora* was assessed using a bacterial mutation test and an *in vitro* chromosome aberration test. As a result of these studies the investigator concluded that lycopene is not genotoxic.

Margin of safety (Application dossier p39)

42. Comparing the NOEL of 601mg lycopene/kg bodyweight/day from the sub-chronic rat study with the anticipated maximum intake from food use of between 1 and 2 mg/day gives a 20000-fold safety margin. Likely intake from food supplement at a level of 20mg/day is associated with a 2000-fold safety margin.

Toxicological assessment of lycopene from sources other than *B. trispora*

43. The applicant has supplied details of additional toxicological studies with lycopene derived from natural tomato extracts, tomato paste and synthetically produced lycopene in a number of forms including cold water dispersible (CWD) and water-soluble (WS) beadlet formulations and dietary supplements.

- Acute toxicity studies (Application dossier p40).
- Sub-chronic and chronic toxicity studies (Application dossier p41).
- Carcinogenicity studies (Application dossier p45).
- Mutagenicity/Genotoxicity studies (Application dossier p46).
- Reproductive toxicity studies (Application dossier p49).
- Human safety data (Application dossier p45).

Discussion: *The Committee was satisfied with the toxicological data supplied by the applicant. However the Committee requested further information on the relevance of a significant change in the incidence of hyaline droplets in the sub-chronic toxicity study (Application dossier p38). The Committee also requested confirmation that the sub-chronic toxicity study parallel tests done using beta-carotene biomass (Application dossier p38) did not raise any additional concerns. The applicant has responded to these comments highlighting that the increase in hyaline droplet nephropathy seen in male rats is not a toxicologically significant finding, noting that the mechanism of action, is of no relevance to humans. The applicant also confirmed that the parallel test with the beta-carotene biomass revealed no additional toxicological findings. The Committee was content with the applicant's responses.*

Allergenicity

Information on this aspect is provided on page 58 of the Application dossier

44. The applicant is reported that the primary source of allergenic material, the source organism, is not present in the final products to any significant degree. This is borne out by the microbiological information (See para.30 above). Protein assays carried out on both the novel food (5% and 20% suspensions) and the sunflower oil were negative at the limit of detection (1μg protein/ml or 1μg protein in 400mg lycopene oil suspension). The applicant concludes that this is indicative of the absence of allergenic potential.

Discussion: *The Committee was content that the final product did not give rise to any allergenic potential.*

Labelling

Information on this aspect is provided on page 22 of the Application dossier

45. The applicant proposes that the ingredient would be described on food labels as "lycopene" without identifying the source to the consumer. The applicant confirms that labelling of products containing the NF will comply with current EU regulations and may include the statement 'contains an additional source of lycopene'.

Discussion: *The Committee was of the view that the proposed labelling should be expanded to indicate the source of the lycopene, in order that individuals who do not wish to consume products derived from, or containing fungi are adequately informed.*

OVERALL DISCUSSION

46. The applicant has provided a clear specification of the proposed novel food and indicated, on the basis of analysis from a number of non-consecutive batches, that the specification is achievable. The process is similar to the production of beta-carotene from *Blakeslea trispora,* which was given a positive evaluation by the SCF in 2001.

47. Given that lycopene is present in a large range of fresh fruits and vegetables, and lycopene extracted from tomatoes is widely available no additional nutritional concerns or benefits associated with consumption of the novel food have been identified. Based on scientific information currently available to the applicant there is sufficient reassurance that consumption of the novel food does not give rise to any toxicological concerns.

48. The applicant has demonstrated that the novel food is stable under normal conditions and when subject to mild temperature abuse. The applicant has also demonstrated that the novel food is microbiologically safe.

49. Although the proposed labelling of the product is adequate, the applicant should comply with general food labelling legislation and ensure that the labelling of the products and the source does not mislead the consumer.

Conclusion

50. The Advisory Committee on Novel Foods and Processes is satisfied by the evidence provided by Vitatene that the range of uses for lycopene from *Blakeslea trispora* is acceptable subject to the applicant's adherence to the proposed specification, and the production parameters described above.

April 2004

APPENDIX III

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Opinion on an application under the novel foods regulation for isomaltulose

Applicant: Cerestar (Cargill Cerestar BVBA)
Responsible Person: Yves Le-Bail Collet
Novel Food: Isomaltulose
EC Classification: 1.2

Introduction

1. An application has been submitted by Cerestar to the UK Competent Authority on 30th October 2003 for approval of isomaltulose for use in a range of food products. A copy of the Application dossier was placed on the FSA web-site at the same time.

2. The present application for authorisation of isomaltulose was prepared pursuant to Commission Recommendation (97/618/EC) of 29 July 1997 concerning the scientific aspects and presentation of information necessary to support applications for the placing on the market of novel foods and novel food ingredients. Isomaltulose has been classified as a pure chemical or simple mixture from a non-GM source (class 1.2). The information presented in the dossier is structured accordingly and is considered below under the schemes outlined in this Commission Recommendation.

I. Specification of the novel food
Application Dossier, p 4-7

3. Certificates and methods for most analyses are to be found in the application dossier in appendix A. These analyses show isomaltulose to be a stable product under normal conditions and when subjected to heat treatments and of high purity containing low levels of arsenic and mercury. The certificates of analysis for the raw materials can be found in appendix B. Batch on batch variation was assessed by testing five non-consecutive batches for composition. The results of these analyses on the samples indicate a narrow range of variation in composition and contaminants. Isomaltulose is produced via enzymatic conversion of sucrose using the non-pathogenic bacteria *Protaminobacter rubrum*.

Discussion: *The Committee requested further analyses on heavy metals to be carried out on the final product. Members accepted the additional data offered reassurance of the heavy metal content of the novel food. Otherwise, Members were satisfied that the analyses*

carried out by the applicant on the raw materials, the final product and the bacteria, P. rubrum demonstrated the safety of the novel food. The applicants' response is tabulated below.

Summary of Metal Analysis Results					
Specification Parameter	Manufacturing Lot				
	(Batch 1)	(Batch 2)	(Batch 3)	(Batch 4)	(Batch 5)
Arsenic (ppb)	<100	<100	<100	<100	<100
Cadmium (ppb)	<10	<10	<10	<10	<10
Lead (ppb)	<20	<20	<20	21	<20
Mercury (ppb)	<5	<5	<5	<5	<5
Nickel (ppb)	<50	<50	<50	<50	<50

II. Effect of the production process applied to the novel food
Application dossier, p 8-19

4. The production process uses food-grade sucrose dissolved in water that is treated with a crude enzyme preparation consisting of *P. rubrum* cell mass killed using formaldehyde. After the enzymatic conversion the cells are removed by filtration. The product is then purified by demineralisation, crystallisation, washing, drying and cooling, producing a final isomaltulose product of at least 99% purity. Formaldehyde is not detectable in the final product.

   Discussion: *The Committee was content that the production process is controlled and that the in-process monitoring steps were sufficient to ensure a safe and consistent product. The Committee was also reassured that the micro-organism P. rubrum is used in the commercial production of isomalt in the EU.*

III. History of the organism used as a source of the novel food
Application dossier, p 20

5. No information is supplied under this heading, as isomaltulose is not sourced from an organism but from food grade sucrose.

IX. Anticipated intake/extent of use of the novel food
Application dossier, p 21-27

6. The applicant intends to use their isomaltulose product as an ingredient in beverages and a variety of other products where it would partly replace other sugars as a source of energy. The availability of these products will not be restricted geographically and there are no plans to target these products at a particular consumer group.

7. The applicant has stated that the highest intake figures from all proposed food categories when related to body weight were found amongst children with mean and 97.5th percentile intakes of 1.6 and 4.0g/kg body weight/day respectively. The lowest intake figures were found amongst the female adults group with a mean intake of 0.2g/kg body weight/day and a 97.5th percentile intake of 0.6g/kg body weight/day.

   Discussion: *The Committee had concerns over the intended market and were concerned that the use of isomaltulose could result in an overall increase in energy intake due to the misinterpretation of any claims made for reduced sweetness or delayed energy release. This issue is addressed in the labelling section below.*

XI. Nutritional information on the novel food
Application dossier, p 28-29

8. Isomaltulose is hydrolysed to equal amounts of fructose and glucose and absorbed almost completely in the small intestine in a similar way to sucrose.

9. Isomaltulose is metabolised at a rate of one-fifth to one quarter that of sucrose, but the final calorific value is the same as sucrose because both disaccharides are cleaved to form glucose and fructose. Isomaltulose is also characterised by a reduced sweetness when compared to sucrose. These functional properties will not be used to target products containing isomaltulose at specific consumer groups but they will be used to alter the organoleptic and physical properties of the products in which it is used.

   Discussion: *The Committee had a concern over the study using 8 ileostomy patients outlined on page 48 of the dossier. Members were concerned over the possibility of a polymorphism in the population for isomaltulose metabolism that may cause problems. The applicant is of the opinion that there is no such polymorphism in the population as isomaltulose is metabolised by the same route as sucrose. The applicant has provided an expert confirming this view.*

   The Committee were otherwise content with the nutritional properties of isomaltulose, but had concerns over the vagueness of the target market and possibility for misinterpretation by the public. These concerns are addressed in the response from the applicant that can be found in section IX.

XII. Microbiological information on the novel food
Application dossier, p 30

10. Microbiological information is presented under schemes XII and XIII in the application dossier.

11. The purity of the stock suspension of *P. rubrum* is verified at the time of its preparation and the absence of mycotoxins and contaminating micro-organisms is also routinely demonstrated. *P. rubrum* has also been demonstrated to be non-pathogenic and has a low order of toxicity (Application dossier, p. 32-34)

12. Specifications for most raw materials including micro-organism screens were reproduced in the application.

    Discussion: *The Committee was satisfied with the information supplied by the applicant and considered the production process, quality control measures and the nature of the final product to be sufficient to ensure no unintentional microbiological contamination of the product. They were also satisfied that the P. rubrum was suitable for food use and would cause no safety concerns.*

XIII. Toxicological information on the novel food
Application dossier, p 31-63

13. A number of toxicological studies have been provided to demonstrate the safety of isomaltulose including chronic and sub-chronic animal studies, developmental studies and various human studies. The toxicological tests described in the dossier have primarily been carried out on isomaltulose products from the applicant and two other manufacturers.

    Discussion: *The Committee was satisfied that the isomaltulose products produced by other manufacturers of isomaltulose were sufficiently similar to the product produced by the applicant for the toxicological studies to be relevant. The Committee was content that the toxicological data provided by the applicant were sufficient to demonstrate the safety of isomaltulose.*

Allergenicity
Application dossier, p 54

14. The applicant has addressed the possibility that protein from the *P. rubrum* may be released during the production process, or protein from other raw materials may pass into the final product. The presence of protein in the final product has been estimated to be 5.2ppm, based on a measured nitrogen concentration of 0.8ppm and a standard conversion factor of 6.25. The protein figure may be an overestimate, since the calculation assumes that all nitrogen is in the form of protein.

    Discussion: *The Committee considered this level of protein to be sufficiently low to cause no problems with allergenicity, taking into account the quantities that might be consumed.*

Labelling

15. The applicant provided the following labelling suggestion:

> **"The designation 'isomaltulose' shall be displayed on the labelling of the product in the list of ingredients of foodstuffs containing it. In a prominently displayed footnote related to the designation isomaltulose by means of an asterisk (*), the words 'isomaltulose is like sugar, a source in equal parts of glucose and fructose, but has a slower rate of digestion and absorption' or 'Isomaltulose, like sugar, is a source of glucose and fructose which undergoes slower digestion and absorption' shall be displayed. The words of the footnote shall have a typeface of at least the same size as the list of ingredients itself."**
>
> ***Discussion:*** *The Committee was content that the labelling was sufficiently clear so that diabetics in particular would be aware that products containing isomaltulose were a source of glucose. In response to the Committee's earlier concern over the possibility of increasing calorific intake because of reduced sweetness and to clarify the exact role of isomaltulose as an ingredient the applicant has provided the following revised labelling suggestion:*
>
> **"Isomaltulose, like sugar, is a source of glucose and fructose, which undergoes slower digestion and absorption. A gram of isomaltulose provides as much total energy/calories as a gram of sugar, but over a prolonged period of time".**
>
> *The Committee noted the inclusion of a statement about the energy content, but was concerned that the final part of the statement could lead to this information being misunderstood by consumers. The Committee concluded that any claims referring either to reduced sweetness of isomaltulose or to the rate of energy release should be accompanied by a statement of the energy equivalence of the novel ingredient with other sugars, presented in a way that cannot be construed as misleading to consumers.*

Overall discussion

16. The Applicant has provided a clear specification of the proposed novel food and indicated, on the basis of analysis from a number of non-consecutive batches that the specification is achievable. The production process differs very little from that used in the production of isomalt, an approved sweetener in the EU.

17. Given that isomaltulose is an isomer of sucrose and is broken down to glucose and fructose in the GI tract in a similar way to sucrose, no additional nutritional concerns were raised from the consumption of the novel food. The information supplied by the applicant offers sufficient reassurance that consumption of the novel food does not give rise to any toxicological concerns.

18. The applicant has demonstrated that the novel food is stable under normal conditions and also when subject to raised temperatures. The applicant has also demonstrated that the novel food is microbiologically safe.

19. The proposed labelling of the product is acceptable, nevertheless the applicant should be reminded of the need to comply with food labelling legislation and ensure that the labelling and presentation of the products does not mislead the consumer, particularly in relation to their energy content.

20. While the projected levels of isomaltulose intake do not give rise to any toxicological concern, the effect of substitution for sucrose on the overall pattern of extrinsic sugar consumption is unknown. The Committee noted concerns that the consumption of extrinsic sugars is already undesirably high and recommended that the applicant undertakes post-market monitoring to demonstrate the pattern of consumption of isomaltulose-containing products and to establish whether consumers correctly understand the energy content of such products compared with their existing counterparts.

Conclusion

21. The Advisory Committee on Novel Foods and Processes is satisfied by the evidence provided by Cerestar that the range of uses for isomaltulose is acceptable, subject to the applicants' adherence to the specification and production parameters described in the application dossier. Isomaltulose containing foods should comply with existing legislation and should not make claims that are likely to mislead consumers. The applicant should establish a post-launch monitoring scheme to determine the patterns of consumption and to ascertain whether the use of isomaltulose leads to any misunderstanding of the energy content of foods in which it is used.

March 2004

APPENDIX IV

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Opinion on an application under the novel foods Regulation for Chia (*Salvia hispanica* L)

Applicant	Robert Craig and Sons
Responsible Person	David Armstrong
EC Classification	2.2

Introduction

1. An application was submitted by R Craig & Sons [M] Ltd. to the UK Competent Authority for authorisation of whole Chia *(Salvia hispanica* L) seed and ground whole Chia as a novel food ingredient in soft grain bread.

2. Chia *(Salvia hispanica* L) is a summer annual herbaceous plant belonging to the mint family (Labiatae). The seed of the Chia plant has a long history of consumption in South America and was a major part of the diet in pre-Columbian civilisations, mainly in the Aztec population. If approved in Europe, Chia seeds would provide consumers with an alternative source of the n-3 polyunsaturated fatty acid, alpha-linolenic acid. A number of studies carried out by one South American company suggest that incorporating Chia seeds into hens' diets results in eggs with an increased content of n-3 fatty acids, thereby providing another potential source of these fatty acids in the diet.

3. The applicant will import whole Chia seeds that are mechanically harvested from conventionally-grown crops in two locations: Peru and Argentina. The whole ground Chia to be marketed in the EU will be produced in the UK by milling the imported whole seeds.

I. Specification of the novel food
pp 5 – 9 of the application dossier

4. Chia *(Salvia hispanica* L.) is a summer annual herbaceous plant belonging to the Labiatae family.

5. Detailed compositional analyses of Chia seed are given in the application dossier for these analyses the applicant has tested four samples from four consignments of Chia from Peru, for proximate analysis, fatty acid composition and heavy metal content. Whilst details of the methods employed in the proximate analysis and heavy metal analysis are not given, fatty acid profiling was carried out to accredited procedures. Mineral, vitamin and carbohydrate

analyses were also carried out on seed in Argentina. Although details of the methods of analysis are not given, the applicant states that the analytical laboratory in Buenos Aires which carried out the analyses is a member of the Union of International Independent Laboratories and is approved by the UK Grain and Feed Trade Association to issue certificates of analysis for feed ingredients.

Discussion: *The Committee was satisfied with the specification of the Novel Food.*

II. Effect of the production process applied to the novel food
pp 10 – 11 of the application dossier

6. Whole Chia seeds are not processed in any way prior to their use as a food ingredient. The seeds are grown in Argentina and Peru under contract for the applicant who states that agronomic practices will be carried out to fully comply with EC legislation. Details of the cultivation conditions are given in the application.

7. Post-harvest, the seed is cleaned mechanically and not subjected to any chemical treatments. The seed is stored in sacks within a fully enclosed warehouse facility in preparation for shipment. Although the information on the storage and transport conditions is limited, following a request from the Committee concerning proposed conditions of handling, storage and shipment, the applicant submitted a proposed HACCP procedure the use of which would minimise batch to batch variation. The seeds are monitored during transport and storage whilst the proposed HACCP plan describes measures to be put in place to control temperature and humidity during storage and transport. The applicant has also provided data in respect of potential microbial contamination of Chia seed.

Discussion: *The Committee was satisfied that the proposed method of production is controlled, and that the in-transport and in-process monitoring steps are appropriate to ensure a safe and consistent product. The Committee accepted the proposed HACCP procedures offered sufficient reassurance that the applicant would be able to ensure the quality of the product.*

III. History of the organism used as a source of the novel food
pp 12 – 13 of the application dossier

8. Chia *(Salvia hispanica* L) seeds have a history of use as a food and a medicine, mainly by the Aztecs up until colonisation by the Europeans. Historically, Chia seeds were roasted and ground to form a meal called 'pinole', then mixed with water to form a porridge or made into cakes. Although grown only on a very small scale, and with rudimentary technological methods, Mexican Indian descendants are still producing this grain. Chia seeds are also used in a Mexican beverage 'chia fresca' in which the seeds are soaked in water and then flavoured with fruit juice and consumed as a drink.

9. An extensive research and development programme on Chia has been undertaken in South America to determine the feasibility of growing this crop on a commercial scale. This has resulted in the development of new production areas and methods. Chia crops have been bred conventionally in South America and have not undergone genetic modification.

Discussion: *The Committee noted that there was limited evidence of recent food use for this product.*

IX. Anticipated intake/extent of use of the novel food
pp 14 – 16 of the application dossier

10. If approved, the applicant's proposed use of Chia is for inclusion of the whole and ground seed as ingredients in soft grain bread. Based on data from the UK National Diet and Nutrition Survey of Adults Aged 19-64 years (2002), the applicant has estimated the amount of the novel ingredient that will be consumed as follows.

11. Pilot studies conducted by the applicant have determined that the level of Chia seeds or whole ground Chia included in the soft grain bread mix shall be 5%. On this basis, daily Chia consumption figures, calculated for British adults would give a mean intake of 2.1g/person/day. High level consumers could consume up to 12.9g/day (97.5th percentile; adult males).

12. In the UK, soft grain bread includes brands that are directly marketed for consumption by children. The applicant did not included estimates of Chia intake for different age groups, but the Food Standards Agency additionally provided estimates based on food consumption data from Diet and Nutrition Surveys of different age groups in Britain.

	Soft grain bread consumption (g/person/day)		Chia consumption (g/person/day)	
	Mean	High level (97.5th percentile)	Mean	High level (97.5th percentile)
Age 1½-4½	22	65	1.1	3.2
Age 4-18	29	86*	1.4	4.3*
Adult 19-64	43	231*	2.1	11.6*

* Note: with the exception of the youngest age group, the low number of consumers of soft grain bread in each survey means that the estimates of high level consumption may not be statistically valid. The figures can therefore only be used as a rough guide to the amount of Chia that would be consumed.

Discussion: *As the proposed range of foods was narrow the Committee was content that the intended use of the product did not give any cause for concern, based on the scientific information currently available.*

X. Nutritional information on the novel food
pp 17 – 19 of the application dossier

13. Chia seeds have an oil content of approximately 32%, which is rich in alpha-linolenic acid (approximately 60%). Seeds are also high in protein (21%), are a rich source of vitamins B, calcium, phosphorus, potassium, zinc and copper.

14. The UK Committee on Medical Aspects of Food and Nutrition Policy (COMA) recommended in 1994 that individuals should increase their intake of n-3 fatty acids since raised intakes are associated with reduced risks of coronary heart disease. The main sources of n-3 fatty acids in the Western diet are oily fish, green vegetables and certain vegetable oils.

15. Alpha-linolenic acid is a significant contributor to the intake of n-3 polyunsaturated fatty acids (PUFA) and can be elongated and desaturated *in vivo* to its long-chain derivatives, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). However, in man the extent and regulation of this conversion is unclear.[1]

16. Chia seed contains natural antioxidants (chlorogenic acid, caffeic acid and flavanol glycosides) which confer a distinct technological advantage over alternative alpha-linolenic acid sources such as flaxseed, in terms of product stability and flavour quality.

17. Since Chia is intended to be used as a nutritional ingredient, any claims made on the food due to the inclusion of the seed or milled whole seed must comply with the general criteria for making nutrient content claims. Final products will need to be labelled with the ingredient name and the prescribed nutritional labelling according to Directive (79/112/EEC as amended).

Discussion: *The Committee did not raise any concerns regarding the nutritional properties of the novel food.*

[1] In 2002, the Food Standards Agency convened a group of expert scientists to review current research investigating whether n-3 PUFA from plant oils (alpha-linolenic acid) were as beneficial to cardiovascular health as the n-3 PUFA from marine oils (EPA and DHA). The group concluded that dietary intake of ALNA has been associated with a beneficial effect on coronary heart disease; however, the results from studies investigating the effects of ALNA supplementation on CHD risk factors have proved equivocal.

XII. Microbiological information on the novel food
p 20 of the application dossier

18. Samples were taken from four consignments of Chia seeds for microbiological analysis. No pathogenic organisms were detected. No substances inhibitory to BHK21 (C-13) cells were detected in a cytotoxicity assay.

19. No mycotoxins were detected in the screen carried out on a composite sample from the four Chia consignments (the applicant describes this analysis under scheme XIII).

Discussion: *The Committee were content with the microbiological information supplied, but requested further information on the control of storage and transport, which would minimise the potential for foodborne spoilage microorganisms to develop. The applicant was able to supply this information and the Committee agreed that the proposed HACCP schema described sufficient measures that would control and monitor levels of moisture within the seeds during bulk storage and transport.*

XIII. Toxicological information on the novel food
pp 21-27 of the application dossier

20. A number of human clinical studies were carried out to assess the safety of this product, including an allergenicity study, a 4-week dietary intervention study and a 12-week randomised, single blind crossover feeding trial.

21. The applicant has also provided details of two 8-week trials in laying hens and one 28-day study in broiler chickens which investigated the effects of Chia on hens' egg yolk composition and chicken breast and thigh muscle.

Discussion: *The Committee was satisfied with the toxicological data supplied by the applicant.*

Allergenicity
pp 21 – 22 of the application dossier

22. An investigation into potential allergenicity of Chia was carried out at BIBRA International Ltd., Surrey, Southampton University and King's College London. The study described in the report was carried out to internationally accepted standards of Good Laboratory Practice but was not subject to any Quality Assurance inspection programme. The study is summarised below and more detailed information can be found in the application dossier.

23. No allergy-associated properties of Chia seed have been reported in the literature to date and no verifiable cases of patients with

allergies to common UK food plants with any botanical relationship to Chia have been found. Chia belongs to the Labiatae, or Laminiaceae, family. The plants of this family include mint, sage, thyme, basil, pennyroyal, lavender, lemon balm, bergamot, oregano and savory. An allergic response to oregano and thyme is cited in the report, however this is related to the leaf of the plant rather than the seed. Consequently the investigation was targeted at the peanut and tree nut allergens as the most likely source of cross-reactivity.

24. An initial IgE binding screen was carried out against a panel of 30 individuals by Multiple Allergy Screening Test (MAST), selected on the basis of their reactivity to peanut. Sera from peanut allergic subjects showed low levels of serological binding to Chia protein in immunoblots, although this binding varied considerably between different serum samples. Inhibition studies indicated that IgE binding to Chia was specific. However, it was considered that the binding of IgE to Chia protein did not necessarily imply that there would be coincidental clinical reaction to Chia.

25. IgE binding of Chia was further analysed using sera from five double-blind lacebo-controlled food challenge (DBPCFC) peanut sensitive individuals. None of these individuals were reported to have allergy to sesame seeds although one had sensitivity to mustard. Immunoblotting demonstrated some IgE binding in these sera, however this was concluded to be non-specific in nature.

26. Furthermore the applicant has suggested that Chia proteins may be highly glycosylated which could affect cross-reactivity. Resistance to proteolytic digestion was investigated in Chia protein extracts using methodology based upon the recommendations of the 2001 Joint FAO/WHO expert consultation on foods derived from biotechnology. Immunoblot analysis demonstrated that all the Chia proteins were sensitive to peptic digestion with the exception of a 14kD band and protein bands below 6kD. The investigator suggests the 14kD band is non-specific cross-reactivity since this band was detected in the negative control serum.

27. Skin prick tests (SPT) were carried out on 12 individuals, selected because of sensitivity to peanut and tree nuts, to determine the clinical relevance of IgE binding activity observed in immunoblotting experiments. Two subjects gave positive SPT responses to Chia which were below the level of the histamine positive control challenge and therefore were considered of doubtful clinical significance. Both subjects were at the most broadly allergic end of the spectrum of sensitivities and both demonstrated sensitisation to sesame. Subsequent immunoblotting revealed a band that could represent an authentic IgE binding protein. This protein was shown to be susceptible to proteolytic digestion. The investigator speculates that this protein is related to sesame and its molecular weight could indicate it to be a profilin, a group of proteins associated with clinical food allergy.

Discussion: *The Committee requested further information regarding the allergenic potential of the novel food. The applicant recognised the potential for such cross-reactivity but was unable to provide the requested data, citing logistic difficulties in assembling the necessary panel of individuals with such allergies. The applicant proposed instead to control this risk by including a precautionary statement on the label of chia-containing foods, informing consumers that the product was not suitable for people suffering from sesame and mustard seed allergies. The applicant also pointed out that chia will be used in softgrain bread products which often contain other ingredients which make them unsuitable for this group of allergic consumers.*

The Committee was disappointed that the applicant was unwilling to conduct additional allergy studies, but accepted that this approach would control the risk associated with cross-reactivity, although was concerned that the use of precautionary labelling might unnecessarily restrict the range of products available to allergic consumers.

Human clinical trials
pp 22-24 of the application dossier

28. The effects of dietary intervention with Chia on selected markers of coagulation and immune function were investigated in humans. The 4-week placebo-controlled dietary intervention study with Chia was carried out in 100 healthy male and female subjects (21-65yr) at the University of Ulster, Northern Ireland. The full study report can be found in the application dossier. Subjects were then randomly allocated to one of four intervention groups and Chia supplements were included at breakfast. Chia intake was 2.5g (n=25), 5g (n=25) or 10g (n=20) per day for 4 weeks. The control group (n=25) received 4g of sunflower seeds per day. Fasting blood samples were taken before and after the intervention period and were assessed for haematological parameters, plasma lipid profiles and lymphocyte subset typing. Additionally, full anthropometric data, a lifestyle and food questionnaire and a questionnaire monitoring any possible adverse effects of the novel food were administered to each subject.

29. Dose response effects of Chia were statistically analysed. Differences between groups were compared using one-way ANOVA, and differences within groups were compared using the paired t-test. According to the investigator, no significant health-related effects associated with consumption of high levels (10g) of Chia seed were detected. However, analysis of the adverse effects questionnaire revealed a significant effect of consumption of 5g per day on tiredness and fatigue. The study investigators concluded this to be an anomalous result since it was a single effect that was not dose-related. Consequently, no significant adverse effects on human health or well-being were seen after consumption of Chia, even at levels exceeding the anticipated mean daily intake.

30. The applicant also describes a human feeding trial carried out at the University of Toronto, Canada, on subjects with type-2 diabetes, investigating the effects of Chia on measures of glycaemic control and traditional and non-traditional risk factors of cardiovascular disease. A randomised single blind crossover trial using 20 subjects with type-2 diabetes was carried out for 12 weeks with individuals consuming 25g Chia/1000kcals. Fasting blood samples and blood pressure measurements were taken at 0 and 12 weeks.

31. The results suggested that when used as a food supplement, the consumption of Chia significantly lowered systolic blood pressure compared to controls and favourably altered coagulation factors. No adverse effects were reported including no change in bleeding times, liver function or kidney parameters and no adverse effects on glycaemic control.

Laying hen and broiler chicken trials
pp 24 – 27 of the application dossier

32. The applicant presents three studies carried out at Queens University, Belfast, in laying hens and broilers, to assess the nutritional and compositional effects on foods produced from animals fed a diet enriched with Chia. These tests do not examine toxicological endpoints.

33. Two laying hen trials investigated the effects of Chia on hens' egg yolk composition by manipulating the feed. The main aim of the first study was to alter the fatty acid composition of the egg yolk by manipulating the hen's diet. The diets were carefully formulated to be isoenergetic and were supplemented with either 1.5% soya oil, 1.5% fish oil or 14% whole Chia seed. No adverse effects were observed, but again no specific toxicity tests were carried out.

Evaluation of n-3 enriched eggs in humans
p 25 of the application dossier

34. This trial, carried out at the Northern Ireland Centre for Diet and Health at the University of Ulster, was intended to evaluate the bioavailability in humans of n-3 fatty acids in eggs produced by hens fed a modified diet supplemented with Chia. This study is not relevant to the assessment of Chia as an ingredient in food.

Additional information relevant to the application
p 28 of the application dossier

35. The applicant has included information on the regulatory status of Chia seed as a food in the USA and Canada. Chia seed is considered to be exempt from pre-market regulatory evaluation in the USA and pre-market notification as a novel food in Canada. This regulatory information does not affect the evaluation of the current

application since novel foods undergo a different regulatory process in the European Union.

Overall Discussion

36. The applicant has provided sufficient information of the proposed specification, intended use and microbiological safety measures, and indicated that on the basis of four samples analysed from four separate batches of seed, these criteria do not give rise to concern. The Committee noted that given the large transport distances involved and the nature of the product, a key element in preventing any undesirable substances from contaminating this product is adherence to the proposed HACCP procedure as described by the applicant.

37. With regard to the concerns about potential allergenicity, the applicant has indicated that they are unable to proceed with the additional studies that would offer further information regarding the allergenic potential of the seed. The Committee agreed with the applicant that mandatory product labelling, and the limited proposed use of the novel food would not present undue risk to the consumer. However, the Committee was in agreement that labelling on the basis that all individuals who have previously demonstrated symptoms of allergy when consuming other seed based products should not consume this product, restricted the choice of such individuals and could not be endorsed.

38. In addition, although the proposed labelling regime could be viewed as adequate to protect the consumer from potential harm when consuming this novel food, the Committee was cautious about agreeing to this approach particularly when the studies requested would better inform the public of the extent of the allergenic potential of the novel food.

Conclusion

39. The Committee is satisfied that in accordance with the criteria defined in Article 3(1) of Regulation (EC) 258/97, the evidence provided by the applicant demonstrates that the consumption of this product is not dangerous, misleading, or nutritionally disadvantageous to the consumer. With regard to the applicant's intention to use mandatory labelling to advise individuals of the potentially allergic nature of the novel food, the Committee wish to note that that as the extent of allergenicity to this product remains unclear, this approach may be unduly restrictive of consumer choice. This issue is one of consumer choice and falls outside the scope of the safety criteria described in the regulation.

40. The Committee also advises that should this product be authorised then Member States should write and inform allergy clinics and allergy support groups of the introduction of this food these groups

may then provide a useful source of on information on the prevalence of chia, and the potential cross-reactivity with existing food allergens.

April 2004

APPENDIX V

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Opinion on substantial equivalence of Hawaiian noni juice considered under Article 5 of the novel foods Regulation

Applicant	Neways 2089 Neways Drive Springville Utah 84663 USA
Responsible Person	William Halterman

Introduction

1. A request was submitted by Neways to the UK Competent Authority for an opinion on the equivalence of their Hawaiian Noni Juice ingredient to the noni juice ingredient produced by Morinda Inc., and authorised by Commission Decision 2003/426/EC.

2. Noni Juice is produced from the fruit of the plant *Morinda citrifolia* L. that is commonly grown in the Pacific region where the juice is traditionally consumed.

3. According to Article 3(4) of (EC) 258/97, the notification procedure applies to "foods or food ingredients... which on the basis of 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 their:

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

Composition

4. The applicant is claiming equivalence to the noni juice produced by Morinda and authorised by Commission Decision 2003/426/EC (June 2003).

5. The applicant initially provided compositional analysis of their Hawaiian noni juice only. The Committee requested data to demonstrate that noni juice produced in Hawaii did not differ from noni juice produced in Tahiti, the country of origin of the approved product. In response, the applicant provided compositional analysis of 4 samples from 4 separate batches of noni juice grown and processed in Hawaii and a similar data set from Tahiti. The results from these analyses demonstrate that the juices from the two countries are comparable.

Parameter	Average Tahitian	Average Hawaiian
Moisture	90.05	89.25
Density	1.08	1.08
Protein	8.55	9.21
Ash	15.61	13.67
Total Fat	1.62	1.48
Total Carbohydrate	38.45	38.35
Total Fibre	12.75	11.29
pH	6.87	6.84

6. The product produced by the applicant is manufactured in the same way as the approved noni ingredient with two pasteurisation steps. The applicant has requested that their production process remains confidential.

7. The applicant has not provided details of the growth and processing for the noni juice from Tahiti which is used as the direct comparison.

8. The applicant additionally provided an expert opinion from an independent botanist stating that the noni plants grown on the two islands are the same species.

Discussion: *The Committee was content that the expert opinion and the compositional analysis demonstrated that the applicants' product is substantially equivalent to the existing product. Members were content that the variations see between the different noni juice samples were consistent with differing growth conditions. Members noted the small but consistent differences between protein levels in the Hawaiian and Tahitian samples and the possibility of allergenicity.*

Nutritional Value and Metabolism

9. The applicant has demonstrated that the noni fruit are substantially equivalent to those grown in Hawaii and that the juice is produced

through a manufacturing process that is not significantly different to that used by Morinda. There is no evidence in the application to suggest that the nutritional value and metabolism will alter significantly from the product currently permitted on the market in the EU.

Discussion: *The Committee was content with the evidence provided by the applicant demonstrating that the nutritional value and metabolism of their product was small and would not be biologically significant when compared with the existing product.*

Intended Use

10. The applicant intends to market their Hawaiian Noni Juice as an ingredient in a fruit juice drink blended with other fruit juices and to be presented in a similar format as that sold by Morinda. The recommended consumption is 30ml/day.

Discussion: *The Committee was content that the applicant's noni juice is to be consumed at the same level and in the same form as the existing product.*

Level of Undesirable Substances

11. The applicant has demonstrated that their pasteurised product is free from *Salmonella* and *Escherichia coli*. In order to minimise the risk of anthraquinones being present in the final product, the applicant has provided written assurances that branches, leaves and bark are routinely removed by hand as part of their Good Manufacturing Practice procedures. There is nothing in the ingredients, origin, harvest, or production method to suggest that the applicant's noni product would contain any undesirable substances that would not be found in the approved noni ingredient.

Discussion: *The Committee was content that the applicant had provided sufficient evidence that their product is substantially equivalent to the existing product in terms of safety with regards to undesirable substances.*

Conclusion

12. The Committee is content that the applicant's approach to demonstrating the equivalence of Neways' Hawaiian Noni Juice with the existing noni juice ingredient is consistent with the criteria set out in article 3(4) of the Novel Foods Regulation (EC) 258/97. The applicant's product is manufactured and marketed in a way that is substantially equivalent to Morinda's Tahitian Noni Juice and data on the composition of noni juice from Hawaii and Tahiti do not indicate any major differences between fruit grown in these two regions of the Pacific.

13. Therefore Hawaiian Noni Juice produced by Neways can be considered to be substantially equivalent to the existing noni juice ingredient.

APPENDIX VI

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Opinion on substantial equivalence of glucosamine HCl (*Aspergillus niger*) considered under Article 5 of the novel foods regulation

Applicant	Cargill Acidulants Cargill Drive Eddyville IA 52553 USA
Responsible Person	Brent Rogers

Introduction

1. A request was received by the UK Competent Authority for an opinion on the equivalence of glucosamine HCl derived from *Aspergillus niger* compared with the existing glucosamine HCl obtained from shellfish.

2. According to Article 3(4) of (EC) 258/97, the notification procedure applies to "foods or food ingredients... which on the basis of 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 their:

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

Composition

3. Glucosamine is a naturally occurring amino sugar, found largely in cartilage that is thought to play a role in the health and resilience of joints.

4. After acid hydrolysis of the non-GM *A. niger* biomass at high temperature, glucosamine HCl is extracted using the same process used for the production of shellfish glucosamine HCl. In both cases, the product is a crystalline product of high chemical purity (≥98%).

5. By means of infrared absorption, HPLC and specific rotation, Cargill Acidulants has demonstrated that glucosamine HCl obtained from *A. niger* is chemically identical to its shellfish counterpart.

   Discussion: *The Committee accepted that the chemical composition of the fungal derived glucosamine is equivalent to the existing product.*

Nutritional value and metabolism

6. In view of the chemical analyses described above, the applicant states that the bioactivity of the fungal glucosamine HCl is not thought to vary from the bioactivity of shellfish derived glucosamine HCl.

   Discussion: *The Committee was content that the alternative source of glucosamine HCl would have no impact on its nutritional value.*

Intended Use

7. Glucosamine HCl from *A.niger* will be used as an ingredient in food supplements[1] and foodstuffs intended for particular nutritional uses (PARNUTS)[2] in the same form that shellfish-derived glucosamine HCl currently marketed in the EU. The applicant has highlighted that although the recommended daily intakes for glucosamine HCl vary, the most widely recommended intake is up to 1500 mg of glucosamine HCl per day. The fungal product would be used in the same way as its existing counterpart and at the same doses.

   Discussion: *The Committee agreed that the intended use of the fungal derived glucosamine HCl did not differ from the existing product.*

Levels of undesirable substances

8. Cargill Acidulants has implemented a quality control system and uses good manufacturing practice for the production of its fungal glucosamine HCl. These include routine checks to ensure the absence of bacterial and fungal contamination (including bacterial and fungal spores).

9. Regarding the potential allergenicity of fungal glucosamine, the applicant provided an expert's opinion that states that this product should not be considered as potentially allergenic. The applicant has also provided data showing the absence of protein in its products. As typical methods for quantifying low levels of proteins cannot be applied to the product due to the interference by the amino group

[1] As defined in Directive 2002/46/EC of 10 June 2002 on the approximation of the laws of the Members States relating to food supplements.

[2] As defined in Directive 89/398/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to foodstuffs intended for particular nutritional uses.

of glucosamine, the applicant has used an alternative SDS-PAGE method. As this analysis was not capable of identifying low molecular weight proteins, the applicant was asked to carry out further analysis of its product using a gel with a greater resolving power to detect proteins of a molecular weight of 5-20 KDa. The results obtained demonstrate the absence of low molecular weight protein and therefore the absence of potentially allergenic compounds in their ingredient.

10. The fungal source, *A.niger*, is non-pathogenic and non-toxic for humans and is currently used for production of citric acid, enzymes and a range of other food ingredients. Although some strains of *A.niger* can produce ochratoxin A, the applicant has stated that none was detected in the production strain. This mycotoxin was also not detected in a sample of fungal glucosamine, at the limit of detection (LOD) of the analytical method used. Similar results were obtained on the detection of aflatoxin in fungal glucosamine HCl. The applicant will conduct routine tests for the presence of ochratoxin A, in accordance with Good Manufacturing Practice.

11. No pesticide was found in glucosamine HCl from *A.niger*, at the LOD of the analytical methods used.

Discussion: *Members accepted that the product was free from microbiological contamination and did not contain detectable levels of proteins and mycotoxins.*

Additional information – Labelling

12. The applicant intends to label the product as "Non-Shellfish Glucosamine Hydrochloride" with a footnote referring to its source "from the fungus *Aspergillus niger*".

13. Glucosamine HCl from *A. niger* products could also carry a certificate to indicate the product was Kosher.

Discussion: *The Committee accepted the proposed labelling noting that it contained sufficient information for individuals who wished to avoid consumption of products derived from fungal sources.*

Conclusion

14. The Committee is content that Cargill's approach to demonstrate the equivalence of their product, glucosamine HCl from *A. niger* with the existing product derived from shellfish is consistent with the criteria set out in Article 3(4) of the Novel Foods Regulation (EC) 258/97. The glucosamine is shown to be chemically equivalent to the existing product and the new and existing products are to be used in the same way. The source and manufacturing process do not give rise to concerns over the presence of undesirable compounds, compared with the existing product.

15. Therefore the glucosamine HCl produced by Cargill can be considered substantially equivalent to the existing glucosamine HCl obtained from shellfish.

APPENDIX VII

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Request for an article 5 opinion on the substantial equivalence of Astaxanthin-rich carotenoid oleoresin extracted from *Haematococcus pluvialis*

Applicant	US Nutra
Responsible Person	Dr Tony Evans
Application	Substantial equivalence
EC guidelines category	*2.2 (the source of the NF has no history of food use in the Community)*

Introduction

1. A request was submitted by US Nutra to the UK Competent Authority for an opinion on the equivalence of their astaxanthin – rich carotenoid oleoresin extracted from the algae *Haematococcus pluvialis*, using super critical carbon dioxide (CO_2) extraction, compared with the existing *H. pluvialis* astaxanthin-rich algal meal.

2. Astaxanthin is a carotenoid found in the algae *Haematococcus pluvialis* and is responsible of the pink coloration in the flesh of fish or crustaceans (e.g. salmon, shrimps), through the ingestion of astaxanthin.

3. *H. pluvialis* meal rich in astaxanthin is currently available to European consumers. A Swedish company, AstaCarotene[1], has been selling capsules containing dried *H. pluvialis* algae (Astaxin), since at least 1995.

4. The request addresses substantial equivalence in accordance with the five criteria set out in Article 3(4) of regulation 258/97: composition, nutritional value, metabolism, intended use and level of undesirable substances contained therein.

Composition

5. The applicant is claiming equivalence to the algal meal product marketed by Astacarotene (Sweden). This claim is substantiated by comparing the composition of the extract with the algal meal raw material, which in turn is equivalent to the algal meal product currently available on the EU market.

[1] Astacarotene is now owned by Fuji Chemical Industries, Japan.

6. **US Nutra extract (astaxanthin-rich carotenoid oleoresin)** – US Nutra produces its extract from a dry *H. pluvialis* algal biomass, using supercritical CO_2 extraction. This extract is composed of 89.2% fatty acids and 10.2% carotenoids of which 99% is astaxanthin. The applicant also demonstrates batch to batch consistency through the analysis of 3 lots of oleoresin complex containing 10% of astaxanthin.

7. **Comparison between the US Nutra extract and the US Nutra raw material** – The lipid and carotenoid levels found in dried *H. pluvialis* and the extract derived from it are compared. All the fatty acids are found in similar proportion in the extract and the algal meal. The carotenoid content is increased 2.5-fold, due to the absence of algal biomass in the extract. Regarding the slight change in astaxanthin isomeric ratio of the extract compared to the dried algae, safety and toxicological studies have not revealed any toxicity issue with the consumption of astaxanthin. The applicant also carried out a literature survey which did not reveal any toxicity issue with the astaxanthin skeleton based compounds.

8. **Comparison of US Nutra raw material and *H. pluvialis* algal meal currently on the EU market** – The lipid and carotenoid levels found typically in *H. pluvialis* algal meal used for the production of the extract are 20-30% and 2-4% respectively. The total astaxanthin level in the dried *H. pluvialis* biomass used by ALGAtechnologies (3.4%-3.9% for 3 samples) is similar to the commercial specification of the existing EU product, which is manufactured in Sweden. The applicant therefore carried out further analysis on both algal meals which show that US Nutra raw material and the algal meal currently on the market contain similar levels of total astaxanthin at respectively 3.2% and 2.3%, on average. The astaxanthin isomeric ratio differs between the two algal meals, but this difference does not present any safety concerns (see para. 7).

9. The algae used by US Nutra are cultivated by a supplier who uses solar powered photobioreactors in a closed, strictly controlled system. Other suppliers are known to produce the algal meal using an indoor pond system, using different production strains.

10. The applicant provides an expert opinion stating that the phytochemical content of different strains of *H. pluvialis* are likely to be the same, if the production processes are similar. A comparison of the production methods used by the company supplying US Nutra and by the current Swedish manufacturer shows that they are very similar. This is further supported by two experts' opinions. The applicant also comments on the sources of the algal meal used by the Swedish manufacturer and has reported that the origin of *H. pluvialis* does not affect significantly the distribution of trans/cis isomers ratios of astaxanthin.

Discussion: *The Committee was satisfied that the data comparing the US Nutra extract, the US Nutra raw material and the existing algal meal shows that they are similar in composition and that levels of astaxanthin and other carotenoids are comparable. The isomeric ratios differ between these three products but the Committee accepted the applicant's argument that this would not have any adverse effects.*

Nutritional value

11. US Nutra provided a limited amount of relevant nutritional data for its extract. This is supporting information only and is not of direct relevance to the request for substantial equivalence. The claimed nutritional value of the product lies in its carotenoid content and given the close correspondence between the levels of carotenoids in the extract and in the existing algal meal, no differences in nutritional value are expected.

Discussion: *The documentation supplied by the applicant did not address any specific benefits associated with the consumption of astaxanthin, and the Committee noted that general comments made by the applicant on the nutritional benefits of consuming carotenoids might not apply to the product in question. For example, it has been shown that high level consumption of ß-carotene in supplements can increase the risk of cancer for smokers and it was not known whether other carotenoids might have a similar effect.*

Intended use

12. US Nutra astaxanthin-rich carotenoid oleoresin will be sold to dietary supplement manufacturers who will then dilute the product in a suitable carrier (e.g. olive oil) to produce capsules containing up to 5 mg of astaxanthin. This is higher than the astaxanthin level found in the Astacarotene product currently sold on the EU market. The label of the product states that there is 4 mg of astaxanthin per capsule (recommended dose: 1 capsule/day) although the applicant's analyses performed on three gave an average astaxanthin content of only 2.8mg.

13. No decrease in astaxanthin content was found in capsules containing US Nutra oleoresin, over a period of 8 and 14 months. Further data are provided in the dossier showing stability of astaxanthin extract at elevated temperatures in a "beadlet" formulation.

Discussion: *The Committee did not raise any concerns over the intended use of the oleoresin, compared with the existing product. The Committee concluded however that the daily consumption of astaxanthin should not exceed current levels. In view of this, the Committee was of the opinion that companies wishing to sell capsules containing US Nutra astaxanthin oleoresin should limit the*

level of incorporation to 4 mg, in line with astaxanthin levels found in existing similar products.

Level of undesirable substances

14. No pesticide or heavy metal contamination has been detected in US Nutra oleoresin, at the limits of detection of the methods used.

15. US Nutra also provides microbiological results obtained on their product in appendix 14 of Annex A. Each count of total viable bacteria, yeast, mould, *Staphylococcus* or *Pseudomonas* is less than 10 per gram. The absence of *Salmonella* and *E.coli is* also reported in the same US Nutra oleoresin sample.

Discussion: *The Committee was satisfied with the information supplied on the level of undesirable substances in the oleoresin.*

Additional information relevant to the application

16. An unpublished eight-week trial on 42 subjects looking at the effect of oleoresin has shown that US Nutra's oleoresin had no obvious adverse effects.

Discussion: *The Committee acknowledged this study but felt that these data did not provide any relevant information for the safety assessment of the oleoresin.*

Conclusion

17. The Committee is content that the applicant's approach to demonstrate the equivalence of the US Nutra extract with the existing *H. pluvialis* algal meal is consistent with the criteria set in Article 3(4) of the Novel Foods Regulation (EC) 258/97. The extract is shown to be a subset of the constituents of the existing product, and that the new and existing products are being used in the same way as dietary supplements in capsule form.

18. Therefore, the astaxanthin-rich carotenoid oleoresin produced by US Nutra can be considered substantially equivalent to the existing algal meal produced by Astacarotene.

19. The data provided by US Nutra on their product relate to *H. pluvialis* algal meal produced by a single supplier. The applicant noted that they might wish in future to manufacture the extract from algal meal obtained from other manufacturers, including those who supply products that are currently on the EU market. The Committee considered that the use of extracts from *H. pluvialis* algal meal produced by other manufacturers would be acceptable, provided that the production methods and the composition of the meal and the resulting extract were similar to those described in the dossier.

APPENDIX VIII

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Opinion on substantial equivalence of free phytosterols considered under Article 5 of the novel foods regulation

Applicant	Triple Crown AB Björnnäsvägen 27 113 47 Stockholm Sweden
Responsible Person	Dr Kjell Sjöberg

Introduction

1. A request was submitted by Triple Crown to the UK Competent Authority for an opinion on the equivalence of their free phytosterols compared with the existing phytosterol esters used by Unilever and authorised by Commission Decision 2004/335/EC.[1] Triple Crown has sought authorisation for their free phytosterols to be used as an ingredient in milk-type products and yoghurt-type products. The application from Triple Crown indicates that they have the same supplier of phytosterols (Cognis) as Unilever, who use the phytosterols in their esterified form.

2. According to Article 3(4) of (EC) 258/97, the notification procedure applies to "foods or food ingredients... which on the basis of 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 their:

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

Composition

3. The applicant is claiming equivalence to the specification for phytosterols set out in Annex 2 of Commission Decision

[1] Commission Decision 2004/335/EC of 31 March 2004 authorising the placing on the market of milk type products and yoghurt type products with added phytosterol esters.

2004/335/EC. Although the phytosterols currently added to defined products are esterified to increase their solubility, the applicant intends to use their phytosterols in their free form. The applicant has highlighted that phytosterols are both ingested and excreted by humans in their free forms, whether they are ingested as free phytosterols or as phytosterol esters.

4. The ingredient is isolated from the same vegetable oils (mainly soy oil) used to produce the existing phytosterol ester ingredient. The applicant has provided data on the specification of its ingredient.

5. The production process of the phytosterol ingredient involves using an emulsifier (E471) and casein as a stabilising agent. Food producers using the ingredient will apply control systems to monitor it in their regular production. In addition, the quality and safety of the final dairy product will be controlled by using an appropriate HACCP system.

Discussion: *The Committee noted that the data provided on the phytosterols content of Triple Crown's ingredient complied with the specification of phytosterols in Commission Decision 2004/335/EC. However, the applicant's documentation specifies a maximum level of 6% for the presence of brassicasterol and other sterols/stanols. Products containing these components within the range of 3-6% would exceed the limits recommended by the Scientific Committee on Food*[2] *and specified in Decision 2004/335/EC. The applicant should therefore ensure that its product complies with the EC specification on phytosterols and ensure that levels of brassicasterol and other sterols/stanols are both below 3%.*

Nutritional value and metabolism

6. The consumption of Triple Crown's free phytosterols in yoghurt has been shown to lower the level of low-density lipoprotein (LDL) cholesterol in humans by about 12% when consumed at a dose of 1.8g/day over a period of two weeks. This effect is similar to the effect reported for the existing phytosterol esters and, therefore, the absence of esterification on Triple Crown's phytosterol ingredient does not affect their activity on blood cholesterol levels.

Discussion: *The Committee acknowledged that the cholesterol-lowering effects demonstrated for Triple Crown's phytosterols, which are of a similar dimension in the older, mildly hypercholesterolemic subjects as in the younger, normocholesterolemic, are not specific to Triple Crown's phytosterol ingredient. Similar effects have been reported for other preparations of phytosterols and phytosterol esters.* [2]

[2] Scientific Committee on Food, SCF/CS/NF/DOS/20 ADD 1 Final, 3 October 2002, General view of the Scientific Committee on Food on the long-term effects of the intake of elevated levels of phytosterols from multiple dietary sources, with particular attention to the effects on beta-carotene (expressed on 26 September 2002)

Intended use

7. The applicant intends their free phytosterols to be used in skimmed milk, semi-skimmed milk and low fat yoghurt with added fruits and sugar, as a cholesterol-lowering food ingredient. These products are similar to existing products with added phytosterol esters. The recommended daily intake of the ingredient in these products will be about 1.8 g/day, which is comparable with the phytosterol intake associated with the existing products and is in line with the conditions specified in Commission Decision 2004/335/EC. The applicant is also planning to manufacture a product that will give 1.5 – 2 g of phytosterols in a single portion. All these products will be labelled in accordance with the requirements set in Commission Regulation (EC) No. 608/2004[3] and the applicant provided specimens of the wording that would be used on food labels.

Discussion: *The Committee was content that Triple Crown intends to market their phytosterols mixture in yoghurt- and milk- type products only. The Committee wishes to highlight that this opinion does not extend to other food products, such as chocolate, dough/bread, jelly and mashed potatoes, that are mentioned in their European patent EP1009385. The Committee noted some inaccuracies in the proposed labelling of Triple Crown's products and highlighted the need for the applicant to adhere to.*

Additional information

8. A comparison of the phytosterols produced by the applicant and the existing ingredient was made to highlight their similarities in activity, phytosterol profile, intended use, level of intake, labelling, processing and control systems.

Discussion: *The Committee did not comment on this additional information provided by Triple Crown.*

Conclusion

9. The Committee is content that Triple Crown's approach to demonstrate the equivalence of their free phytosterols, to be used in yoghurt- and milk- type products, with the existing phytosterol esters is consistent with the criteria set in Article 3(4) of the Novel Foods Regulation (EC) 258/97.

10. Therefore, the free phytosterols produced by Triple Crown can be considered substantially equivalent to the existing phytosterol esters and used in the same products as those described in Commission Directive 2004/335/EC.

[3] Commission Regulation (EC) No 608/2004 of 31 March 2004 concerning the labelling of foods and food ingredients with added phytosterols, phytosterol esters, phytostanols and/or phytostanol esters.

11. Triple Crown should ensure that the labelling of products containing their phytosterols must comply with Commission Regulation 608/2004 concerning the labelling of foods with added phytosterols, and more specifically to Article 2 of this regulation.

APPENDIX IX

Mr John Ritz
Prairie Lane Ltd
PO Box 7 Group 25 RR1
Petersfield
Manitoba
R0C 2L0

10th June 2004 Reference: NFU 501

Saskatoon Berries

Dear Mr Ritz

On the 5th May you requested an opinion from the Food Standards Agency, as the competent UK assessment body under the novel foods regulation (EC) No 258/97, on the substantial equivalence of Saskatoon berries to blueberries, according to Article 3(4) of that regulation. I am writing to inform you that we do not accept that substantial equivalence has been established between these two berries.

In reaching this conclusion, we have taken advice from the Advisory Committee on Novel Foods and Processes (ACNFP), which discussed your application dossier at its meeting on 27 May. The Committee acknowledged that Saskatoon berries have a history of consumption in Canada and do not appear to present any safety concerns. However, they could not be considered substantially equivalent to blueberries as the two species are unrelated and their phytochemical compositions are very different. The Committee accepted that the nutritional profiles of the two berries are similar, but advised that any possible concerns over the safety of the berries would be centred on other components which clear differ between the two types of berry.

The ACNFP advised that Saskatoon berries should not therefore be considered for authorisation under the simplified procedure for novel foods, which applies to products that are substantially equivalent to an existing food. Instead, any authorisation would have to be granted under the standard procedure described in Article 4 of the regulation.

Please let us know if you intend to convert your application for a dossier for assessment under the "full" Article 4 procedure.

Yours sincerely

Dr Sandy Lawrie
ACNFP Secretary

cc

Dr Joe Mazza	Agriculture and Agri-Food Canada
Rick Cooper	Canadian High Commission

APPENDIX X

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Opinion on substantial equivalence of noni juice produced on a number of Pacific Islands considered under Article 5 of the novel foods regulation

Applicant: The Pacific Islands Noni Association and other named Pacific Islands Noni Juice Producers

EU Representative: Anthony Bush
CAMedica Ltd
Brook House
Tarrington
Herefordshire
HR1 4EU

Introduction

1. A request was submitted to the UK Competent Authority on 23 April 2004 for an opinion on equivalence of a noni juice ingredient. The applicant, the Pacific Islands Noni Association (PINA) and other named Pacific Island noni juice producers (listed in Annex A) seeks a view on equivalence to the to the noni juice ingredient produced by Morinda Inc, and authorised in 2003 by Commission Decision 2003/426/EC.

2. The specification and any conditions attached to this opinion apply solely and equally to the producers listed in Annex A.

3. Noni juice is produced from the fruit of the plant *Morinda citrifolia* L. and is commonly grown in the Pacific region where the juice is traditionally consumed.

4. According to Article 3(4) of (EC) 258/97, the notification procedure applies to "foods or food ingredients... which on the basis of 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 their:

   - Composition
   - Nutritional value
   - Metabolism

- Intended use
- Level of undesirable substances contained therein".

5. The legal implication of a trade association applying for approval under (EC) 258/97 has been investigated and no issues were raised.

Composition, Nutritional Value and Metabolism

(a) Major Constituents

6. The applicant is claiming equivalence to the approved noni juice produced in Tahiti and marketed by Morinda, which was authorised by Commission Decision 2003/426/EC in June 2003.

7. The noni juices produced by the applicant are produced on a variety of islands in the Pacific region and use a traditional 'maturation' process to condition the fruit prior to pressing. The applicant has produced an expert opinion, which states that the plant and fruits are the same as those grown in Tahiti.

8. The Noni juice produced by the applicant is intended to be consumed as a 100% pure juice. The applicant initially provided compositional data for one noni juice produced in Fiji. The Committee requested that additional compositional data be provided to demonstrate that the composition of the Fijian juice was typical of juice produced by all the named companies. The Committee also requested that the compositional specification should also be compared to a noni juice produced in Tahiti. The applicant provided further compositional analysis consisting of two samples of juice produced by the named companies in Fiji and Samoa. These were compared with two samples of a 100% pure noni juice from Tahiti. The results of these analyses indicate that whilst there were a number of differences these were within the limits of variation and the major constituents were comparable.

Composition, Nutritional Value and Metabolism

(b) Effect of the production process

9. The fruit is collected, and leaves, twigs and roots are excluded from the production process in order to prevent a build up of anthraquinones. The fruit is then washed, and graded and they are then left to mature in sealed, food-grade stainless steel drums for 8-10 weeks. The fruit is then pressed and the juice is filtered and pasteurised. This production process used by the applicant differs from the approved product. The applicant has explained that the maturation process is used to alter the colour and flavour, and also increases the amount of juice yield by the fruit. In contrast, the juice prepared by Morinda Inc. is prepared from fresh fruit without any intentional delay beyond what might normally occur during transportation from the field to the processing plant. The applicant does not believe that there are any significant compositional

differences between juice produced from matured fruits and those produced using the process employed by Morinda Inc.

10. The Committee requested further information to clarify the nature of the maturation process, specifically whether the process produced alcohol. In response the applicant demonstrated that the product is not fermented and provided analyses of ethanol levels. Ethanol levels in the final product were 0.3% v/v which is comparable to both fruit juices in general and the authorised noni juice (0.2% v/v). The applicant also noted that 'pasteurisation, would arrest any further fermentation and also ensure microbiological safety'.

Composition, Nutritional Value and Metabolism

(c) Amino acid profile

11. In their consideration of the data described in para 8, the Committee noted that the levels of free amino acids, measured by an ion exchange chromatographic technique, were consistently higher in the applicant's products than in the Tahitian product. Members requested further information to clarify the nature of these differences and also requested information regarding the analytical methods employed. The applicant noted that the differences in amino acid levels are due to proteolysis occurring during the maturation stage and this leads to raised levels of free amino acids in the juice. The applicant agrees that whilst the values are higher than in the approved noni juice, they remain within the ranges seen for a number of other fruit juices.

Discussion:

(a) *The Committee agreed with the expert opinion that the plant and fruit was the same as the one used in the approved product. Members also agreed that the major components were present at levels that were typical of those seen in the approved noni product.*

(b) *The Committee accepted that the maturation process did not produce an alcoholic beverage. The Committee also agreed with the applicant that the production process had no significant effect on the composition of the final product and was produced in a manner that would not result in anthraquinones being present in the final product.*

(c) *The Committee accepted that the increased levels of amino acids were likely to be as a result of enzymic degradation, and agreed with the applicant that there was no evidence to suggest that the nutritional value and metabolism will alter significantly from the noni juice currently permitted on the EU market.*

Intended Use

12. The applicant intends to market their product in a similar way to the approved product. The juice will be sold as a pure 100% pasteurised noni juice along with a recommended daily intake of 30ml. This recommendation is in line with Morinda Inc's approval, although the Morinda juice is consumed along with other ingredients in juice-based drinks.

    Discussion: *The Committee was content that the applicant's noni juice is to be consumed in similar manner to the approved product.*

Level of Undesirable Substances

13. In the first instance the applicant provided microbiological analyses on a single representative sample of noni. The Committee requested further microbiological analysis be provided in order to demonstrate that the levels of microorganisms seen were typical of those seen in juice produced by other named producers. The Committee also requested clarification as to how the applicant intended to ensure that that the fungal and yeast contamination was minimised during the maturation period. The applicant provided additional microbiological analyses on the same samples as those described in para 8. Although not as detailed as those provided in the original data set, these gave a value of <10 CFU/g (Total viable count). The applicant has also provided clarification as to how a quality assurance procedure will minimise fungal contamination during the maturation period Regular microbiological analyses will be carried out on all noni batches to show that the mould and yeast count is within acceptable levels and there will be regular visual inspections throughout the processing. Batches, which do not meet the quality assurance checks, will be discarded. Data provided by the applicant indicates that there is little growth of yeasts and mould throughout the maturation period.

14. The Committee received two comments during a 21-day public consultation which related to the lack of adequate data provided by the applicant to demonstrate the lack of undesirable substances such as anthraquinones and mycotoxins and the requirement that all of the named companies adhere to the same QA procedures. The Committee agreed with both comments and requested that analyses be carried out on a range of products in order to demonstrate the absence mycotoxins (in particular patulin). Four samples of the applicant's noni juice have been tested for the presence of patulin and were found to be free from mycotoxins. The applicant is aware of Regulation (EC) 1425/2003[1] which set the maximum levels for patulin in fruit juices at 50ppb, along with a "code of practice for the prevention and reduction of patulin contamination in apple juice and apple juice ingredients in other beverages", which details

[1] OJ L 203, 12.8.2003, p.1.

maximum levels of patulin along with the sampling method and reference analysis method.

15. In addition to the QA measures described above, the applicant companies are introducing a HACCP system in accordance with Codex Alimentarius principles in order to minimise the risk of contamination throughout all the stages of production of the juice. These procedures will be independently audited on an annual basis.

Discussion: *The Committee agreed that the additional data provided demonstrates that the final pasteurised product is free from microbial contamination. Concerning the presence of mycotoxins, and in particular patulin, Members accepted there was little yeast and mould contamination during the maturation period and that the four patulin analyses demonstrated that the final product was within the levels described in Commission Regulation (EC) 466/2001. Given the lengthy maturation period, the Committee were also reassured with the applicant's assurance that the quality control procedures will prevent the growth of fungi. The applicant's intention to ensure that all parties who are named at annex 1 implement a HACCP system provides further reassurance that the product will be produced in a manner that minimised the risk of contamination.*

Conclusion

16. The Committee is content that sufficient data have been provided to evaluate the equivalence of the noni juice, produced by the applicant companies on a variety of islands in the Pacific region, with the existing noni juice ingredient, according to the criteria set out in Article 3(4) of the Novel Foods Regulation (EC) 258/97.

17. The noni juice produced by the applicant companies is manufactured and marketed in such a way that is not identical to the approved noni juice. However, the compositional data provided indicates that the maturation process has no significant effect on the nutrient composition of the final product, when compared with the approved product. Also, consumption in the form of pure juice, rather than as a component of juice-based drinks, does not invalidate the comparison.

18. Therefore the committee is content that noni juice produced by the named producers [Annex A] is substantially equivalent to the existing noni juice ingredient. The Committee would like to emphasis that any noni juice products introduced on the market will need to comply with existing EU legislation, including rules on the composition and labelling of fruit juices (2001/112/EEC) and on mycotoxins (Regulation 466/2001).

October 2004

Annex A

Applicant companies

Company	Contact	Address
Pure Pacific Nin Juice	Francis Reimers	P.O. Box 786 Majuru, Marshall Islands
*C-View Investments Ltd.	Lynn-Lu	Lautoka Fiji
Pacific Fabrication	Carmen Bigler	P.O. Box 424 Majuru, Marshall Islands
*Noni PNG Ltd.	Brendan Chan	P.O. Box 246, Lae Morobe Province, PNG
Royale Noni Ltd.	William Brull	P.O. Box 5842, Navutu Lautoka, Fiji
*Herbex Ltd *.	Gerhard Stemmler	P.O. Box 516 Lautoka, Fiji
Bioteknology Ltd.	Jeff Liew	P.O. Box 13617 Suva, Fiji
*Owlfiji Ltd.	George Patterson	P.O. Box 149 Levuka, Fiji
*Frezco Beverages Ltd.	Mohammed Altaaf	P.O. Box 9303 Nada, Fiji
*Nonu Supplies Fiji Ltd.	David A. Khan	P.O. Box 10664 Suva, Fiji
*Lita Noni Juice Co.	T. Takataka	P.O. Box 1584 Nuku'alofa, Tonga
*Industrial Botanicals Co Ltd.	Simon Agius	P.O. Box 1584, PKF House Port Vila, Vanuatu
*Cook Islands Noni Marke.	Teava Iro Jnr.	P.O. Box 184 Rarotonga, Cook Islands
Sunline Noni Ltd.	Taura Tukaroa	P.O. Box 295 Rarotonga, Cook Islands
*Cook Islands Prem. NoniNonimana Inc. Ltd.	Danny Mataroa	P.O. Box 78 Rarotonga, Cook Islands
Noni Ltd.	Richard Browne	P.O. Box 144 Rarotonga, Cook Islands
*CCK Trading	Ken Newton	P.O. Box 3043 Apia, Samoa
*Wilex	Eddie Wilson	P.O. Box 3428 Apia, Samoa
Nonu Samoan Ent.	Tia Siaosi	P.O. Box 1099 Apia, Samoa
Richard Keil Holdings	Richard Keil	P.O. Box 977 Apia, Samoa

Company	Contact	Address
Belau Agro Ind. Dev. Corp	Minoru Ueki	P.O. Box 8013/1197 Koror, Palau
Tima Ltd	Ian Simpson	Taveuni Fiji
Urabuta Ltd	John May	Lautoka Fiji
King Solomon Noni	Morgan Wairiu	Honiara, Solomon Islands
*Panacea Pacific Products Ltd	Ed Eves	P.O. Box 600 Port Vila, Vanuatu l
*Nauru Noni	Nelson Tamakin	P.O. Box 452, Buada District, Republic of Nauru

*** PINA Members**

APPENDIX XI

Mr Andreas Klepsch
DG SANCO Unit D/4
European Commission
Rue de la Loi 200
BRUSSELS
Belgium
B-1049

5th February 2004 Reference: NFU 308

Dear Mr Klepsch

Application under Regulation (EC) 258/97 – 1507 maize line: UK response to Dutch CA's initial opinion

As the UK Competent Authority, the Food Standards Agency has sought comments from the Advisory Committee on Novel Foods and Processes (ACNFP) on the initial assessment report on this product, prepared by the Dutch CA under the novel foods regulation (EC) No 258/97.

The Committee was unable to agree with the positive initial opinion of the Dutch Competent Authority for the marketing of maize line 1507, and highlighted a number of concerns, as set out in the attached paper.

We cannot support the marketing of this product until these considerations have been satisfactorily addressed.

Yours sincerely

Sonia Molnar
Novel Foods Division

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

1507 Maize line

Specificity of Expression of Novel Genetic Material

In section 5 of application dossier (p72) the applicants describe the safety assessment of this line based on a number of parameters, one of which is western blot analysis of the CRY1F and PAT proteins in transgenic plants. The applicants state that other than the expected bands there are no bands in the western blots to indicate either partial or fusion proteins in these lines. This is at odds with the western blot results presented in the application, and some of the conclusions cannot be made based on the cross-reactivity of the antisera:

1) There is not just one band for the CRY1F, there is a doublet. The applicants rely on a paper by Evans in 1998 to explain the origins of this doublet. There should be a more detailed analysis of this doublet in these exact plants so that a full safety assessment can be made.

2) The cross-reactivity in healthy pollen grains with PAT antisera is poorly explained and the existence of the cross-reactivity means that the firm conclusions made in Section 5 of the dossier cannot be upheld. A case could be made that the PAT protein is expressed in pollen of transgenic plants but it is modified to cause a shift in the molecular weight. This molecular weight could coincide with the same sized band that the PAT antisera cross reacts with in wild type and transgenic lines. Such a scenario may be regarded as unlikely, but the applicants have presented no evidence to either prove or disprove such an event (and such events can occur). Expression of these proteins is not impossible in pollen when using a CaMV35S promoter, which has variable reports in pollen expression studies. It is surprising that the applicants have relied on a source of antisera that gives such cross reaction with a host protein to base their conclusions on.

The applicants should repeat these experiments using pre-absorbed antisera to remove cross-reactivity, and/or using a better source of polyclonal antisera, and/or use a monoclonal antisera or specific phage display antisera. This could also be backed up by northern or RT-PCR experiments on RNA from wild type and transgenic pollen.

Toxicological information on the Novel Food

The initial opinion refers to a subsequent investigation of the CRY1F protein with a database of 2033 sequences of allergenic proteins (p76). Corresponding sequences of six contiguous amino acids were found in three proteins from the database used. The applicant should provide details of the three allergens which showed homology with CRY1F.

APPENDIX XII

Mr Andreas Klepsch
European Commission
DG-SANCO
Rue de la Loi 200
B-1049 Brussels
Belgium

21 April 2004 Reference: NFU 476

Dear Andreas

LUCERNE LEAF EXTRACTS

Referring to the Commission letter of 27 February 2004, the UK Competent Authority (CA) sought comments from the Advisory Committee on Novel Foods and Processes (ACNFP) on the French CA's Initial Opinion for the application made by Viridis for the above products, under the Novel Food Regulation (EC) 258/97. We agree with the French opinion and would like to make the following comments:

1. The Committee was concerned about the presence of coumestrol (phytoestrogens) in the two lucerne leaf extracts, especially if these are used in children's diet. The Committee agreed with the French CA that the applicant should provide further toxicological data on the two lucerne leaf extracts. This should include whether the presence of coumestrol in these products does present any risk for human health (including children).

2. The Committee does not consider that the applicant has satisfactorily supplied details on how to control the ingestion of the protein, mineral and vitamin complex. More specifically, the Committee did not understand how the applicant could advise that this product should be administered in increments of 2.5g/day when eaten for the first time, given that its lowest recommended intake is 5g/day for children weighing less than 15 kg.

3. Regarding the processing of the protein, mineral and vitamin complex, the Committee noted that heating this product at 90°C would not exclude the possible presence of bacterial spores in this ingredient.

4. The Committee noted that lucerne protein ingredient may be subject to the Food Additives Regulations by virtue of its intended use as an emulsifier and foaming agent.

In conclusion, the UK CA agrees with the French CA that the two lucerne extracts produced by Viridis should be given a negative opinion, and does not support the marketing of these ingredients.

Yours sincerely

Dr Sandy Lawrie
For the UK Competent Authority

APPENDIX XIII

ACNFP Secretary's response to EFSA on guidance for risk assessment of genetically modified plants and derived food and feed

Section III.D.7.9 (Allergenicity)

This section makes several references to new, alternative models which might be useful for assessing potential allergenicity. Can the GMO Panel make a commitment to review this area and to update this section of the guidance after a suitable period e.g. 2 years?

Page 27 comments on the use of pepsin resistance tests, but makes no reference to the use of simulated intestinal fluid – another test that has sometimes been used as part of the allergenicity assessment. The ACNFP agrees that these tests are not needed but I think it would be useful to state explicitly that the GMO Panel thinks that this test is not appropriate and to explain why.

The 4th paragraph on page 27 refers to Animal models. There is an inconsistency between line 27, which says that "their use should be encouraged", and line 23, which describes these tests as "essential".

Is this paragraph on animal tests the last in the sequence of additional tests introduced in the last line of page 26? Or is it a separate observation that applies to all assessments? The final version of the document could be improved by re-formatting this section to make the sub-headings and the relationships between the different paragraphs clearer.

Annex 1

On page 45, line 32, mentions literature reviews. I suggest that applicants should be explicitly advised to carry out literature reviews in the areas relevant to their dossier and to describe the literature searches that they have carried out as part of this task (cf the section on homology searches on page 22 line 46).

APPENDIX XIV

ACNFP guidelines for the presentation of data to demonstrate substantial equivalence between a novel food or food ingredient and an existing counterpart

Introduction

Regulation (EC) No 258/97 on novel foods and novel food ingredients provides a simplified route for manufacturers to bring certain novel products to the market, by making a notification in accordance with Article 5. This procedure applies only to:

- foods and food ingredients consisting of or isolated from micro-organisms, fungi or algae; and
- foods and food ingredients consisting of or isolated from plants and food ingredients isolated from animals (except for foods and food ingredients obtained by traditional propagating or breeding practices and having a history of safe food use)

and the product in question must be shown to be "substantially equivalent" to an existing food or food ingredient as regards:[1]

- its composition,
- its nutritional value,
- its metabolism,
- its intended use and
- the level of undesirable substances.

In practice each notification requires a suitable opinion from a competent authority in one of the member states that confirms that the product meets these criteria. The competent authority in the UK is the Food Standards Agency, which draws on the expert advice of the ACNFP.

This document provides guidance on the data that should be submitted when a request for such an opinion is submitted for consideration by the ACNFP.

Contents of the application dossier

The dossier should contain basic administrative information, data addressing each of the 5 criteria mentioned above and any other relevant information on the novel product.

[1] Article 3(4) of regulation 258/97.

(a) *administrative information*

Name of the applicant; contact information (postal and email addresses, telephone and fax); name of the novel food or food ingredient; date of the application.

(b) *composition*

The application should contain a specification of the novel product, including information on the source organism, methods used for preparation of the novel product, the composition of the final product and maximum limits for the presence of known or potential contaminants. Comparisons should be drawn with only one existing product, which should be described in the same level of detail. Compositional analyses should be reported for a number of representative batches of each product and the results should be analysed by appropriate statistical methods, including information on the power of the study. The ACNFP Secretariat can advise on the range of analyses that should be carried out for each specific product.

If the applicant is not the manufacturer of the novel product, the application should indicate the intended supplier(s).

The novel and existing products should be derived from the same or very similar species, grown and harvested under similar conditions. This requirement may be relaxed if the products are refined extracts that contain only a limited number of defined chemical components.

The novel product should not contain significant levels of substances that are not present in the existing counterpart – the presence of such substances requires a fuller evaluation that is not compatible with the simplified procedure.

(c) *nutritional value*/(d) *metabolism*

If the composition of the product does not differ from its existing counterpart, it is unlikely that there will be significant differences in its nutritional value or metabolism. Nevertheless, the application should consider this possibility and provide results of any relevant studies. These might include the results of stability tests to show that the novel product does not degenerate during storage or use, or bioavailability studies.

(e) *intended use*

The application should describe the uses of the existing product and explain which of those are relevant to the novel product. This may include use in food supplements, use as a food, and use as a food ingredient in a list of specified food categories. The levels of use should be specified.

Where the application covers use in food supplements, it should include information on the recommended dosage of the new and existing products.

In general applications cannot include new uses, particularly if they are likely to result in consumption of the product by a wider range of the population or at higher levels, compared with the existing product. In particular, the novel product cannot be assessed as "substantially equivalent" if it is intended for use as an ingredient in foods and the existing counterpart is only consumed in the form of food supplements.

(f) *level of undesirable substances*

The application should consider the potential presence of undesirable substances, such as environmental contaminants, mycotoxins, allergens, naturally occurring toxins and anti-nutrients, and undesirable microorganisms. Evidence should be provided that the levels of these substances are comparable between the new and existing products. Analytical data that are provided should be for a number of representative batches of the new and existing products.

The applicant should undertake a detailed literature search to identify any undesirable substances that could be associated with the novel product and its source and, where necessary, should provide analytical data to show that such substances are not present.

The new product should obviously comply with existing EU legislation on contaminants, pesticides etc

(g) *other relevant data*

The application should also include any other relevant data on the novel product, including the reports of any safety studies that have been conducted on it.

It should also include a proposal for labelling, to demonstrate that consumers will be adequately informed of the nature of the novel ingredient, its intended use and any restrictions that may need to be respected.

The application should include details of any monitoring that will be undertaken to provide ongoing assurance that the product is of appropriate quality with regard to its composition and the presence of undesirable substances.

March 2005

These guidelines have been developed by the Committee based on its experience with the range of products that have been assessed under this procedure. The document will be revised from time to time in response to any comments from interested parties or to take account of new information and further experience gained under the procedure.

The Committee welcomes comments and suggestions, which can be sent to:

ACNFP Secretariat
515 Aviation House
125 Kingsway
London WC2B 6NH

acnfp@foodstandards.gsi.gov.uk

Cumulative Index

Published by Food Standards Agency
June 2005
FSA/0983/0505