

ADVISORY COMMITTEE FOR NOVEL FOODS AND PROCESSES**D-TAGATOSE****ISSUE**

An application has been submitted to the UK Competent Authority for authorisation of D-tagatose under the novel foods regulation (EC) No 258/97. The Committee is asked to advise whether the available data provide an adequate basis for a safety assessment, and if it recommends authorisation of the product.

BACKGROUND

Appendix 1, p 9-14

1. An application has been submitted by Bioresco, acting on behalf of Arla Food Ingredients, Denmark for authorisation of D-tagatose as a novel ingredient in the EU. The application was accepted by the UK Competent Authority on 1st March 2005. In accordance with Article 6(3) of Regulation (EC) No 258/97, the UK has 3 months to prepare an initial assessment report on the above application. The initial assessment will then be circulated for review by the Competent Authorities in the other Member States (MS).
2. The application dossier, including seven annexes, is attached as Appendix 1. A number of sections in Appendix 1 contain commercially sensitive details of the production process, or marketing information. These appear highlighted in the dossier. In addition, Annexes 1,2 and 6 are confidential in their entirety.
3. D-tagatose is a monosaccharide, an enantiomer of D-fructose (inversion at C-4), which is not commonly found in food, although it is found at low levels in heat-treated dairy products such as sterilised and dried milk. D-tagatose has 75-92% the sweetness of sucrose and behaves like other sugars in terms of hygroscopicity, and stability under low pH and raised temperature (Appendix 1 p15). Its principal purpose is as a carbohydrate source that is non-cariogenic and as a prebiotic. During preliminary discussions with the applicant, the Secretariat noted that the use of D-tagatose in foods could fall within the legal definition of a sweetener, requiring authorisation under food additive legislation rather than the regulation on novel foods. This issue has been resolved following discussion with the Commission and other MS and the consensus view is that tagatose should be regarded as a novel food ingredient and not as a food additive.
4. The present application for authorisation of D-tagatose 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. D-tagatose has been classified as a pure chemical or simple mixture

from a non-GM source with no history of food use in the EC (class 1.2). The requirements for a submission for this class are as follows:

| | | | | | |
|------------|--|----------|-------------|---|----------|
| I | Specification of the NF | X | <i>VIII</i> | <i>Ability to survive in and colonise the human gut</i> | - |
| II | Effect of the production process applied to the NF | X | IX | Anticipated intake/extent of use of the NF | X |
| III | History of the organism used as the source of the NF | X | <i>X</i> | <i>Information from previous human exposure to the NF or its source</i> | - |
| <i>IV</i> | <i>Effect of the genetic modification on the properties of the host organism</i> | - | XI | Nutritional information on the NF | X |
| <i>V</i> | <i>Genetic stability of the GMO</i> | - | XII | Microbiological information on the NF | X |
| <i>VI</i> | <i>Specificity of expression of novel genetic material</i> | - | XIII | Toxicological information on the NF | X |
| <i>VII</i> | <i>Transfer of genetic material from GM microorganisms</i> | - | | | |

The information presented in the dossier is structured accordingly and is considered below under these schemes.

- The Committee will wish to note that the application dossier was published on the Agency's web-site for a 21-day public consultation on 8 March 2005 to allow the public to input into the UK assessment. Any comments received will be tabled at the meeting for consideration by the Committee.

I. Specification of the novel food

Appendix 1 p14-16 and p.25-27, Annexes 1 (Confidential), 3 and 4

- As an enantiomer of D-fructose, D-tagatose has the empirical formula $C_6H_{12}O_6$ (Appendix 1 Figure1). An overview of the compositional analyses of D-tagatose and the raw materials used in its production are given in Annex 1, sections 3 and 5. Detailed information on the specifications of raw materials, process chemicals and ion exchange resins are listed in Annex 1 (Confidential).
- The NI is synthesised by enzymatic hydrolysis from lactose with a purity of $\geq 99\%$. All chemicals used in the production process are high purity and have low levels of heavy metals (Annex 1 - confidential). The resulting D-tagatose has a purity of no less than 98%, a lead content no greater than 1 ppm and an ash content of no more than 0.1%.
- D-tagatose is produced from lactose using a two-step process. In the first instance lactose is enzymically hydrolysed to galactose and glucose. The galactose is then isomerised to D-tagatose at a high pH using calcium hydroxide as a complexing agent.
- Batch-on-batch variation has been determined by analysis of 6 batches of D-tagatose, produced by the applicant at pilot scale (Appendix 1, Annex 4). These indicate a high degree of reproducibility. HPLC data (Appendix 1, Annex 4) show

that the only detectable impurity in the final product is galactose, which is present as a by-product of the production process only.

10. D-tagatose has been evaluated by JECFA¹ on three occasions, most recently in 2004 when it allocated an ADI “not specified” (see Annex 3). The detail of the toxicological evaluation is discussed later in this paper (para 29).

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

Appendix 1, p 17 -24

11. The production process uses food-grade lactose and a two-stage enzymatic process to produce the NI. The applicant has summarised the process in Appendix 1, p17 and included a detailed flow diagram (Appendix 1 Figure 2).
12. All chemicals used in the production process including the raw material (lactose) and the immobilised lactase (obtained from *Aspergillus oryzae*) are all food grade, as are all anti-microbials and column regeneration chemicals (see Appendix 1 p 23-24 and Annex 1 (confidential) for specifications).
13. A significant amount of the process is commercially confidential and members are advised to consult the dossier for specific details of the process.
14. **Process** - Lactose is first dissolved in hot water before being passed through a cation-exchange column, which effectively reduces the pH. The pH is adjusted, by addition of lactose solution, to obtain a mildly acidic solution. This solution is then pasteurised before being passed through a column that contains immobilised lactase. This lactase is widely used throughout the EU. In order to avoid contamination of the cells with micro-organisms, the applicant cleans the column regularly using a defined anti-microbial solution. The resultant hydrolysed lactose solution is concentrated using a plate heat evaporator, before being fractionated using a cation exchange resin. The resultant fractions are collected and the galactose-rich fraction retained. This fraction is cooled and a defined amount of Ca(OH)₂ is added to move the isomerisation equilibrium in favour of the D-tagatose. Once this stage is completed the NI is removed by addition of CO₂ which neutralises the mixture and causes precipitation of the calcium as Ca(CO₂)₃.

¹ JECFA: Joint FAO/WHO Expert Group on Food Additives.

15. **Purification** - As described above the NI is produced from food grade materials. The NI is also subject to a series of purification steps that remove impurities. Ionic impurities are removed by ionic demineralisation and any non-ionic impurities (see para. 16) are removed during the chromatographic purification and decolorisation process. The applicant acknowledges the possibility of contamination by ion-exchange resin and notes that such components would be removed during the precipitation and filtration stages. The NI is then purified by a series of filtration, evaporation demineralisation and fractionation. Finally, the NI is crystallised and dried.
16. The applicant notes that the conditions used to produce the NI are relatively benign and do not favour other reactions that could potentially occur particularly during the isomerisation of D-galactose. A brief discussion of the potential impurities that could arise as a result of the occurrence of these ‘side reactions’ is detailed on page 25. None of the compounds described were found in detectable quantities (Annex 4).

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

Appendix 1, p 33-43, Annex 6 (confidential)

17. The applicant intends to the NI to be used as an ingredient in a variety of products where it will be used as a nutritive substance. The availability of these products will not be restricted geographically and there are no plans to target these products at particular consumer groups. A complete list of products and the levels at which D-tagatose is to be added can be found in the table below:

| Food Category | Proposed food use | Added Tagatose (g per 100g of food) |
|---|--|-------------------------------------|
| Baked goods | Cookies | 2 |
| | Quick breads | 2 |
| | Muffins | 2 |
| | Quick bread type | 2 |
| | Coffee cakes | 2 |
| Beverages | Diet” and “sugar- free” carbonated beverages; non- carbonated beverages sweetened with low- calorie sweeteners – includes milk-based beverages, juices, juice drinks, teas, and coffee- based beverages (ready- to- drink, prepared from mix, and dry mix forms) | 1 |
| Coffee drinks | Such as cappuccino and latte | 1 |
| Frozen milk based desserts, reduced/low fat | Light ice cream | 3 |
| | Frozen milk desserts | 3 |
| | Low fat and non fat frozen yoghurts | 3 |
| | Related frozen novelties | 3 |
| Hard candies | Hard candies including regular and dietetic candies | 15 |
| Health bars and diet soft candies | Low fat, reduced fat, diet meal, energy or nutrient fortified bars, dietetic soft candies | 10 |
| Icings | Icings (or glazes), such as those used on | 30 |

| | | |
|---|---|---|
| | cookies, pastries, brownies, and angel food, chiffon, and pound cakes | |
| Meal Replacement / supplement Beverages | Meal replacement beverages, diet meal beverages, nutrient supplement beverages (ready- to- drink, prepared from mix, and dry mix forms) | 5g per serving (240ml) / which equates to 2.08g per 100g |
| | Protein drinks, including supplements and diet beverages (ready- to-drink, prepared from mix, and dry mix forms) | 1 |
| Milk chocolate | Milk chocolate candies and coatings/coverings | 3 |
| Ready-to-eat cereals | All ready-to-eat cereals | 3g per serving (approx. serving 15-55g ²) which equates to 5-20g per 100g |
| Smoothies | Fruit and dairy “smoothie” type beverages | 1 |
| Soft/chewy candies | Soft/ chewy candies such as caramels, toffees, taffies, nougats, Creams, fudges, fondant, and fruit- based confectionery (excluding Marshmallows, soft jellies, gummies, panned candies, and liquorice) | 3 |
| Chewing gum | Tooth friendly (non-cariogenic) chewing gum | 30 |
| Table top sweeteners, low calorie | Sugar substitutes/replacements | 1g per serving ³ |
| Yoghurt | Yoghurt | 2 |

18. Intakes of D-tagatose added in different foods listed above (except chewing gum and food supplements) were estimated for the United States population, using the dietary survey approach. Consumption data were taken from the 1994-1996 Continuing Survey of Food Intakes by Individuals (CSFII) on US households and from the 1998 CSFII on children’s aged 0-9. The data were collected using 24-hour recall interviews for two non-consecutive days and defined according to time and eating occasions. It was assumed that each consumed food or food component would contain the NI at the use level stated in the table above. Annex 6 of Appendix 1 provides a more detailed breakdown and discussion of these findings. The table below provides a summary of the estimated intake of the NI for US population older than 2 years old:

² Serving suggestions are taken from the Code of Federal Regulations: 20 CFR 101.12 concerning the reference amounts customarily consumed per eating occasion amounts

³ According to US regulations (20 CFR 101.12) the serving suggestions for sugar substitutes is an amount equivalent to one reference amount for sugars in sweetness.

| Summary of the estimated two-day average intake of D-tagatose from its proposed food use (excluding chewing gum and food supplements) | | | | | |
|--|------------|---|-----------------------------------|--------------------|-----------------------------------|
| Population | Age | 2-day average intake of D-tagatose | | | |
| | | g/person/day | | g/kg bw/day | |
| | | Mean | 90th Percentile | Mean | 90th Percentile |
| Children | 2-5 | 3.2 | 6.2 | 0.19 | 0.37 |
| Young schoolchildren | 6-12 | 4.3 | 8.5 | 0.14 | 0.28 |
| Teenagers | 13-19 | 4.7 | 9.5 | 0.08 | 0.16 |
| Adults | > 20 | 4.8 | 10.5 | 0.06 | 0.14 |
| Total population | > 2 | 4.6 | 9.8 | 0.08 | 0.19 |

19. Table 22 in Annex 6 of Appendix 1 (confidential) provides an estimated intake of the NI in the total population for all food categories. By comparing this data, the applicant has highlighted that a consumer of ready made cereals is unlikely to eat a diet and health bar and a yoghurt in the same meal.
20. The intake of the NI from sugarless chewing gum was based on the results from a separate survey carried out in 1995, which used 1044 US households. The results of this survey indicated that 2.5 pieces of sugarless chewing gum was consumed on average for pre-schoolers and teenagers. As an average piece of gum weighs 2-3g of which 30% is D-tagatose, the applicant estimates that it will correspond to an intake of 1.8-2.1g/day. The applicant highlights that slightly higher values are shown in table 23 of Annex 6 (confidential) because a 3g standard serving was applied.
21. The applicant states that intake of the NI via the consumption of food supplements is unlikely to exceed 3g/person/day.

XI. Nutritional information on the novel food

Appendix 1, p 28-34

22. The applicant is of the opinion that despite the clear sweetening function of the NI, this should not be perceived as a dietary alternative to sucrose because of the significantly more expensive production costs. The product should therefore be viewed for its advantageous nutritional properties. In practical terms, these are the non-cariogenic and reduced energy benefits of the product, together with its low glycaemic impact and prebiotic capabilities.
23. **Reduced Energy Value.** D-tagatose is incompletely absorbed and therefore has a lower energy value compared with sucrose. The applicant highlights a number of studies that indicate that the NI has an energy value of 1.5kcal/g. This figure is significantly lower than the value of 4kcal/g that currently applies for the labelling all sugars in accordance with the requirements of the Nutritional Labelling Directive (90/496/EC). If approved, D-tagatose would have to comply with (90/496/EC) and whilst there is a precedent for a novel food authorisation being

issued on the basis that this directive is amended (Salatrim, 2003⁴). The applicant makes it clear that this property of the novel ingredient does not form any part of this request for approval, but does not rule this out as a future use of the novel ingredient. The applicant is fully aware that such an application would require an amendment to this Directive and would automatically trigger a requirement to carry out an assessment by EFSA.

24. Lower glycaemic impact. Studies indicate that the incomplete absorption of D-tagatose means that its glycaemic index value is 5 compared to that of glucose. A secondary effect is the ability of the NI, when co-consumed with glucose, to reduce the glycaemic response by 20%. These properties may form the basis for the use of the NI in certain cereal or fruit bar products.

25. Prebiotic activity. D-tagatose can be metabolised by Lactobacilli, Enterococci and other lactic acid bacteria to produce butyrate, which is understood to have a beneficial trophic effect on the colonic mucosa. This property may be the basis of the use in D-tagatose in breakfast cereals, cereal bars, meal replacements and yoghurt.

XII. Microbiological information on the novel food

Appendix 1 Annex 4

26. The production of the NI does not involve the use of micro-organism. The microbiological purity of D-tagatose is given in tables 1 and 2 of Annex 4. These data indicate that the final product is essentially free from microbial contamination

XIII. Toxicological information on the novel food

Appendix 1, p 44-111s

27. Biochemical Aspects (Absorption, distribution and excretion)

The applicant presents a number of studies that indicate to varying degrees incomplete absorption of D-tagatose. One study also details a pronounced increase in the short chain fatty acids in the blood. SCFA's are produced by bacterial fermentation of the unabsorbed NI in the large intestine. The applicant refers to this 'prebiotic' effect as a tangible benefit that can be attributed to the consumption of the NI. Indirect studies carried out on humans using L-Rhamnose, a comparable molecule. Although Rhamnose is a slightly smaller molecule, it has slightly higher lipophobicity, and these are the parameters that regulate absorption. Rhamnose studies carried out by on human ileostomists indicate large variations in the absorption of the novel ingredient. Similar variable results were seen for polyols and the applicant concludes that the use of ileostomy patients may have limited use in the interpretation of the absorption of monosaccharides and polyols. The findings do however indicate that the absorption of tagatose is similar to that seen for polyols *per se*.

⁴ Commission Decision 2003/867/EC for authorising the placing on the market of salatrim as novel food ingredients under Regulation No 258/97 of the European Parliament and of the Council

28. Metabolism

The applicant is of the view that the metabolism of D-Tagatose takes place along well defined biochemical pathways. Once the initial phosphorylation step is complete, the metabolism converges with the pathway seen for fructose. There are a number of studies that have been carried out in support of this statement and it is noted that with the exception of D-tagatose, D-Tagatose-1-phosphate are the only new molecular species that the body is exposed to.

29. Toxicological studies (Appendix 1 pp 56–87)

The initial JECFA evaluation of D-Tagatose highlighted a number of concerns namely, glycogen deposition, hypertrophy in the liver, and increased serum levels of uric acid.

30. As a result of these concerns the applicant commissioned a significant number of studies and as noted previously in this paper, following a detailed evaluation JECFA allocated an ADI “not specified” for D-Tagatose at its 63rd Meeting in June 2004. The applicant has submitted the same data for novel food approval, and these are all summarised in Appendix 1 pp 56 – 87. The Secretariat has also summarised all these studies in the Tables below. Complete details of these studies are available from the Secretariat.

31. In order to assist members’ evaluation of these data, the Secretariat has provided an extract from the JECFA paper (Attached at Appendix 2), which provides a clear explanation as to why the additional studies were commissioned.

| Genotoxicity studies | | | | |
|--|--|------------------------|----------|------------------------------------|
| Test | Test system | Concentration | Results | Reference |
| Bacterial gene mutation ^a | S.typhimurium (TA 1535, TA 1537, TA1538, TA98, TA100); E.coli (WP2 _{uvrA}) | 100-5000 mg/plate | Negative | Lawlor, 1993; Kruger, 1999a |
| Chromosomal aberration ^{a, b} | Chinese hamster ovary cells | 1250-5000 mg/ml | Negative | Murli, 1994a; Kruger et al., 1999a |
| Micronucleus formation ^d | CD-1 mouse bone marrow | 1250-5000 mg/bw (p.o.) | Negative | Murli, 1994a; Kruger et al., 1999a |
| TK-locus mutation ^{a, c} | | | Negative | |

^{a)} With and without exogenic metabolic activation (rat liver S9 fraction).

^{b)} Treatment time, 7.4h (without activation), 2h (with activation); harvest time 10h

^{c)} Treatment time, 4h

^{d)} Termination 24, 28 and 72h after dosing

| Animal studies | | | | | |
|---|-------------------------------|---|---|---|--|
| Type of study | Species (N) | Dose level (% of diet or g/kg bw) | Results | NOAEL (% of diet and/or g/kg bw/d) | References |
| acute toxicity test | Rats (5M, 5F) Mice (5M) | 10g/kg bw (single dose) | no mortality or reaction to treatment | 10g/kg bw | Trimmer, 1989 |
| Subchronic (90-d) toxicity study | S-D rats (20M 20F / group) | 0,5,10,20% 10% fru + 10% cellulose | soft stool (day 1-3); reduced weight gain in 20% group; increased abs. and rel. liver weights in 10, 15, 20% tag groups, some hypertrophy of hepatocytes in 15, 20% group ^a | 5% ^c [3.7 (F) and 4.1 (F) g/kg bw/d] | Trimmer et al., 1993 Kruger et al., 1999c |
| Subchronic (29-31 d) study on liver parameters ^d | S-D rats (20M / group) | 0,5,10,20% tag | Dose dependent increase of liver glycogen and liver weight ^b . No ultrastructural (EM) changes of liver tissue except increased glycogen deposition. Slight increased ALAT, ASAT in 20% tag group probably in response | n.d ^d | Lina et al., 1998 Bar et al., 1999 |
| Subchronic (6-month) toxicity study | Wistar rats (60 F/group) | 0, 5, 10% tag, 20% fru, 10% tag + 10% fru Interim kills on day 3, 7, 14, 28, 94, 128 (10F / group) | Only liver and plasma parameters were examined. No increase of liver weight and no histopathological changes ^a ; no changes of plasma parameters. | 10% of diet [5.8 g/kg bw/d (day 1-28); 4.8 g/kg bw/d (day 1-28)] | Lina & de Bie, 2000d |
| Chronic (24-month) toxicity/carcinogenicity study | Wistar rats | 0, 2.5, 5, 10% tag, 20% fru, 10% tag + 10% fru | Examination of organ weights and his topathology limited to liver, kidneys, adrenals and tests (cecum: weight only). Liver enlargement in 10% tag (M), 20% Fru (M), 10% tag +fru (M&F) but nomorphological changes. Increased nephrocalcinosis in females of all tag dose groups and in 10% tag (M) and 10% + 10% fru (M). increased incidence of adrenomedullary proliferative | 2.5% of diet [< 1 g/kg bw/d] | Lina & Kuper, 2002 Lina & Bar, 2003 |

| | | | | | |
|---|---------------------------|---|--|--------------------------------|---|
| | | | disease in 2.5% tag (M), 5% tag (M & F), 10% (M & F) and 10% + 10% fru (M&F) | | |
| Energy balance study (33-d) | Pigs (2 / group) | 0, 20% tag, 20% suc, 10% tag + 10 % suc | No ultrastructural (EM) changes of liver tissues | 5 g/kg bw/d | Mann, 1997 |
| Embryotoxicity / teratogenicity study (range finding) | S-D rats (5M / group) | 0, 4, 8, 12, 16, 20 g tag/kg bw/d (day 6-15 of gestation) | Soft stool and diarrhoea at .12 g/kg bw. (No adverse effect otherwise). | 20 g/kg bw/d (11 g/kg bw/d) | Schroeder, 1994a |
| Embryotoxicity / teratogenicity study | S-D rats (24M / group) | 0, 4, 12, 20 g tag/kg bw/d (day 6-15 of gestation) | Maternal liver weight increased in 12 and 20 g/kg bw group. No morphological changes in liver. No adverse effects otherwise. | 20 g/kg bw/d | Schroeder, 1994b; Kruger et al., 1999b |

Key: M = Male, F = Female

Abbreviations: tag, D- tagatose; fru, fructose; suc, sucrose; ALAT, alanine aminotransferase; ASAT, aspartate minotransferase; S-D, Sprague-Dawley; n.d., not determined; bw, body weight.

- a) Animals killed after overnight fasting
- b) Animals killed in the fed condition
- c) Based on effects on liver weight
- d) Liver weight cannot be used as a basis for determination of the NOAEL since rats were killed in the fed condition (increased weight is partly due to liver glycogen accumulation). D- Tagatose intake was about 11.4 g/kg bw/d at the high-dose level.
- e) A series of additional studies on the effects of D- tagatose on liver weight and glycogen accumulation was performed but their results are not shown in this table because toxicological end-points (e.g., histopathology) were not examined.

Allergenicity and Labelling

Appendix 1 p.109-110 and Annex 4

32. The NI is obtained from crystalline lactose, which is in turn obtained from cheese whey, which contains protein at levels of not more than 0.2%. In view of the known allergenic potential of milk and derived products, the applicant has been able to demonstrate the absence of whey protein in the NI using an ELISA method. (<10µg protein equivalent / g NI, see Annex 4). The same assay detected protein in 2 (of 3) lactose samples tested.
33. The applicant speculates that the absence of whey protein is likely to be due to the production process which involves the use of heat-treatment, high pH, ion-exchange resins and activated carbons.
34. The applicant provides evidence that the NI is free from whey proteins, and concludes that it is not necessary to label D-tagatose as derived from milk. However, a new amendment (2003/89/EC) to the food labelling directive (2000/13/EC) requires specified food allergens and their derived ingredients to be included in ingredients listing. Milk is a specified allergen and that this requirement would apply to the novel ingredient, irrespective of the fact that it is obtained only indirectly from milk. Whilst the European Commission can grant provisional exemption from this requirement, the Secretariat is not aware that the applicant has sought an exemption and will therefore reflect this view in the text of the opinion.
35. The applicant has also stated that no warning on laxative effects will be put on foods containing D-tagatose because the maximum intake of D-tagatose will not exceed 10g per eating occasion for consumers of any age group (see table 3 of Appendix 1). However, the applicant has acknowledged that it may be appropriate to label any foods containing more than 15g of D-tagatose per serving with the statement "excessive consumption may produce laxative effects", as required by Directive 96/21/EC.

Consumer access and choice

36. The Secretariat has considered the issues of access and choice in relation to D-tagatose. If authorised, D-tagatose would be available for use in products across the UK and subsequently in other EU Member States. In practical terms, access to products containing D-tagatose could be limited by a high price or by limited geographic distribution, which are both driven by commercial considerations that cannot be predicted at this stage.
37. It is envisaged that the introduction of products containing D-tagatose will increase existing consumer choice and will not affect access to existing foods that do not contain this ingredient. The consumer would be aware of the presence of D-tagatose through the ingredient list and, most likely, through special marketing that highlights its contribution to the nutrient composition of the foods.

COMMITTEE ACTION REQUIRED

38. The Committee is asked whether the available data provide a sufficient basis for evaluating the safety of the novel food ingredient.
39. If so, the Committee is asked whether it is content, pending its review of any public comments on the application, to recommend approval of D-tagatose as a novel ingredient in the foodstuffs listed in paragraph 17.
40. If not, the Committee is asked to indicate what additional data would be required.

Secretariat
March 2005

Appendix attached:

- **Appendix 1: Application for the evaluation of D-Tagatose under Regulation (EC) No. 258/97.**
 - **Annex 1:** Specifications of raw materials, process chemicals, and ion exchange resins (**CONFIDENTIAL**)
 - **Annex 2:** Safety data of immobilised lactase (**CONFIDENTIAL**)
 - **Annex 3:** JECFA specifications of D-tagatose
 - **Annex 4:** Analytical data of representative batches of D-tagatose
 - **Annex 5:** Determination of D-tagatose in foods
 - **Annex 6:** Projection of D-tagatose intake by the dietary survey approach (**CONFIDENTIAL**)
 - **Annex 7:** Data requirements for the evaluation of D-tagatose according to Commission Recommendation 97/618/EC and UK-ACNFP decision tree

Appendix 2 Extract from JECFA Paper (restricted)

ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

Application for the evaluation of D-Tagatose under Regulation (EC) No 258/97.

This document has been published on the Food Standards Agency website at:

<http://www.food.gov.uk/science/ouradvisors/novelfood/assess/fullapplics/tagatose>

**Secretariat
March 2005**