

ADVISORY COMMITTEE FOR NOVEL FOODS AND PROCESSES

EXTRACT OF MAGNOLIA BARK

ISSUE

An application has been submitted to the UK Competent Authority for authorisation of a supercritical carbon dioxide extract of magnolia bark, *Magnoliae officinalis* 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 of this novel ingredient, and if it recommends authorisation of the product.

Background

1. An application has been submitted by the William Wrigley Jr. Company for authorisation of magnolia bark extract as a novel ingredient in the EU. The application was accepted by the UK Competent Authority on [2] September 2009. 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 application. The initial assessment will then be circulated for review by the Competent Authorities in the other Member States.
2. The Magnolia bark extract is obtained from the bark of the plant *Magnoliae officinalis*. This plant is native to the mountains and valleys of China and, according to the applicant, has been used for centuries as part of traditional Asian remedies. Magnolia bark supercritical carbon dioxide extract (MBSE) is mainly composed of two phenolic compounds, magnolol and honokiol. The applicant intends to incorporate MBSE into two confectionery products (chewing gum and a limited number of mint confectionery products) at a maximum use level of 0.2% for their breath freshening properties.
3. The present application for authorisation of MBSE 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. MBSE has been classified as a complex novel food from non-GM source, the source of the novel food has no history of food use in the EU (class 2.2). The requirements for a submission for this class are as follows:

I	Specification of the NF	X
II	Effect of the production process applied to the NF	X
III	History of the organism used as the source of the NF	X
IV	<i>Effect of the genetic modification on the properties of the host organism</i>	-
V	<i>Genetic stability of the GMO</i>	-
VI	<i>Specificity of expression of novel genetic material</i>	-
VII	<i>Transfer of genetic material from GM microorganisms</i>	-

VIII	<i>Ability to survive in and colonise the human gut</i>	-
IX	Anticipated intake/extent of use of the NF	X
X	Information from previous human exposure to the NF or its source	X
XI	Nutritional information on the NF	X
XII	Microbiological information on the NF	-
XIII	Toxicological information on the NF	X

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

- The application dossier is attached as Annex 1, and contains three appendices (A-C). A non-confidential version of the application dossier is being placed on the FSA website for a period of 21 days to allow the public to contribute to the assessment. Any comments received will be tabled at the meeting

I. Specification of the novel food

Annex 1, p 4-8

- MBSE contains two major 'active' components which comprise $\geq 94\%$ of the product. The primary component is magnolol (5,5'-diallyl-2,2'-dihydroxybiphenyl) and the extract also contains smaller amounts of honokiol (5,3'-diallyl-2,4'-dihydroxybiphenyl). MBSE is a light brownish powder, soluble in alcohol and insoluble in water. The specification for MBSE can be found in the table below.

Parameter	Specification
Appearance	Light Brownish Powder
Magnolol	92.5% min
Honokiol	0.5% min
Magnolol + Honokiol	94% min
Total Eudesmol	2% max
Moisture	0.5%
Impurities	
Arsenic (ppm)	0.5 max
Lead (ppm)	0.5 max

Total Heavy Metals (ppm)	10 max
Methyl Eugenol	50 max
Turbocurarine (ppm)	2 max
Total Alkaloid (ppm)	100 max

6. The specification indicates that magnolol and honokiol will be present at levels of not less than 94% and with a third component, Eudesmol (cedrol) is present at levels up to 2% (Table I.e-2, Annex 1, p 7). Batch analysis indicates a small amount of batch on batch variation when 6 different lots of MBSE are compared, indicating that levels of magnolol and honokiol are higher than reported in the specification. All batches analysed met the required specification criteria for MBSE,

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

Annex 1, p 9-12

7. MBSE is obtained from the bark of the *Magnoliae officinalis* plant, which is washed and oven dried to reduce moisture content before being crushed and extracted with supercritical carbon dioxide. The extract is dissolved in medical-grade ethanol and re-crystallised yielding MBSE. The applicant has provided additional information on the production process on page 10 of the dossier of Annex 1.
8. MBSE is produced in accordance with Good Manufacturing Practice procedures. The applicant states that a Hazard Analysis and Critical Control Point (HACCP) program has been implemented for the manufacture of MBSE.
9. The applicant has carried out stability analyses of MBSE in chewing gum and mints over a 12 week period under accelerated storage conditions. The applicant is of the view that the results of these analyses demonstrate the stability of MBSE in chewing gum and mints with minimal loss over the 12 week test period, but does not provide any indication of what this equates to in terms of actual shelf life (Figures II.c-1 and II.c-2, Annex 1, p 11-12).

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

Annex 1, p 13-15

10. MBSE is obtained solely from the bark of *Magnoliae officinalis* subsp. *biloba* of the Family *Magnoliaceae*. It is a species of *Magnolia* native to the mountains and valleys of China at altitudes of 300-1500m. Although magnolia bark can be obtained from at least one other species, *Magnolia obovata*, this species is not used in the production of MBSE.

11. The applicant states that traditional herbal remedies containing magnolia bark, such as Banxia Houpo Tang, Saiboku-To, Hsiao-Cheng-Chi-Tang and Wuu-Ji-San, have been used for centuries as part of Asian remedies. Although the applicant also states that various magnolia bark derived products are available, these would all be regarded to be traditional medicinal products. In view of this, and in response to a request by the Secretariat, the Applicant sought a view from the Medicines and Healthcare products Regulatory Agency (MHRA) as to whether MBSE would be regarded as a medicinal product for their proposed use. The MHRA have concluded that use of MBSE in chewing gum would not be medicinal, providing that it was limited to claims regarding breath freshening, and that the amount of MBSE did not exceed 3mg per stick. Members should note that this limit is based on medicinal function and is not a safety limit.

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

Annex 1, p 16-24

12. The applicant intends to incorporate MBSE into gum and mints at a maximum use level of 0.2%. Based on a maximum gum and mint size of 1.5g, each serving would contain a maximum of 3mg of MBSE. The applicant has accepted the view of the MHRA and states that the use of MBSE in gum and mints will be limited to its breath freshening capability and that products containing MBSE will not have any medicinal or associated health claims.

Proposed Food Use	Serving Size	MBSE (mg/serving)	Use-Level (%)
Mints	1.5g	3	0.2
Chewing Gum	1.4g	2.8	0.2

Summary of the individual proposed food-uses and use levels for MBSE in the UK

13. The applicant has indicated that the product will be added solely to mint and chewing gum products which are marketed with a view to breath freshening. MBSE will not therefore be added to bubble-gum type products or to other mint based confectionery such as ‘Everton Mints’

14. The applicant has provided intake data from a range of population groups using information from the NDNS surveys which are available to the general public. The following two tables summarise the estimated total intake of gum and mints (g/person/day) by the UK population. Based on these data teenagers are the greatest mean and 95th percentile all-user intakes of gum and mints, with values of 3.25 and 14g/person/day, and 3.67 and 11.6g/person/day respectively. Intakes in children and adults were comparable. (Intake data calculated on a body weight basis is given below

Summary of the estimated intake of chewing gum in the UK by population group (NDNS data)

Population Group	Age Group (Years)	Actual No of Total Users	All-Person Consumption			All-Users Consumption		
			Mean (g)	Percentile (g)		Mean (g)	Percentile (g)	
				90	95		90	95
Young People	4-11	91	0.195	0	0.857	2.10	4.86	6.00
Teenagers	12-18	108	0.516	0.571	2.571	3.25	6.86	14.00
Adults	19-64	67	0.070	0	0	1.71	2.86	8.57

Summary of the estimated daily intake of mints in the UK by population group (NDNS data)

Population Group	Age Group (Years)	Actual No of Total Users	All-Person Consumption			All-Users Consumption		
			Mean (g)	Percentile (g)		Mean (g)	Percentile (g)	
				90	95		90	95
Young People	4-11	100	0.315	0.143	2.14	3.12	7.71	10.40
Teenagers	12-18	55	0.265	0	1.71	3.67	7.29	11.60
Adults	19-64	55	0.086	0	0	2.58	5.74	10.90

15. The applicant has carried out additional intake studies to supplement the lack of data in certain population groups in the NDNS database. The applicant's in-house data on gum and mint consumption in the UK are broadly comparable to estimates made using the NDNS database and indicate that mean consumption in the UK for chewing gum and mints was 3.06 g/day (gum) 2.06 g/day (mints). High level (95th percentile) intake was 12.1 g/day (gum) and 9.03 g/day (mints). (Annex 1, p 20, Table IX. c-3.)

16. The applicant has provided estimates for the total daily intake of MBSE from all proposed food-uses. Highest exposure to MBSE was observed in teenagers with 95th percentile estimates of 28 and 23 mg/person/day for gum and mint consumption respectively. The data is summarised in the tables below.

Summary of the estimated daily intake of MBSE in chewing gum in the UK by population group (NDNS data).

Population Group	Age Group (Years)	Actual No of Total Users	All-Person Consumption			All-Users Consumption		
			Mean (mg)	Percentile (mg)		Mean (mg)	Percentile (mg)	
				90	95		90	95
Young People	4-11	91	0.4	0	1.7	4.2	9.7	12.0
Teenagers	12-18	108	1.0	1.1	5.1	6.5	13.7	28.0
Adults	19-64	67	0.1	0	0	3.4	5.7	17.1

Summary of the estimated daily intake of MBSE in mints in the UK by population group (NDNS data).

Population Group	Age Group (Years)	Actual No of Total Users	All-Person Consumption			All-Users Consumption		
			Mean (mg)	Percentile (mg)		Mean (mg)	Percentile (mg)	
				90	95		90	95
Young People	4-11	100	0.63	0.3	4.3	6.2	15.4	20.8
Teenagers	12-18	55	0.53	0	3.4	7.3	14.6	23.2
Adults	19-64	55	0.17	0	0	5.2	11.5	21.8

17. The applicant has also summarised estimated intake in terms of bodyweight. These data indicate that children (aged 4-11) have the highest consumption of gums and mints with a MBSE intake at the 95th percentile of 0.6 g/kg bodyweight (chewing gum) and 1.04 g/kg bodyweight (mints). Although the applicant indicates that it is extremely unlikely that the same individuals would simultaneously be high level consumers of both products, this would give a combined exposure of 1.64mg/kg/day (64mg/person/day MBSE) in this population group.

18. Due to the hydrophobic nature of MBSE, the applicant intends to incorporate the MBSE into the outer coating of chewing gum because it is more readily released. Studies to determine the quantity of MBSE that is released from the product during chewing are summarised in Annex 1, p 22.

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

Annex 1, p 25

19. The applicant does not view the limited use of magnolia bark products as traditional remedies to be indicative of widespread exposure to the principal

components of MBSE. The applicant reports that MBSE has GRAS (Generally Recognised as Safe) status in the United States where it is currently marketed in gum and mint products. There have been no reported incidences of adverse effects associated with the use of these products containing MBSE. The Secretariat has asked for additional information regarding post market monitoring of adverse reactions. These data indicate that there was on average one adverse report for every 10 million units sold up to May 2009. This information is attached at **Annex 2**.

XI. Nutritional information on the novel food

Annex 1, p 26

20. The addition of MBSE to mints and gum is solely for the purposes of breath freshening and the applicant contends that this use is not expected to have a nutritional impact on the diet.

XII. Microbiological information on the novel food

Annex 1, p 7-8

21. The application dossier does not include a section with microbial information on the novel food, however the Secretariat notes that a number of batches of MBSE have been analysed and were shown to be demonstrably free from microbial contamination (Annex 1, p 8, Table I.f-1).

XIII. Toxicological information on the novel food

Annex 1, p 27-66

Subchronic toxicity

22. The applicant conducted a 21 day toxicity study on MBSE in male and female Sprague-Dawley rats (Liu *et al*, 2007, attached at **Annex 3**). (This study was primarily a pilot dose-ranging study for a subsequent 90 day study – see para 23). Animals consumed MBSE in the diet at doses of 0, 60, 120, 240 or 480 mg/kg body weight per day. Although differences in certain haematological parameters were observed, the applicant notes that these of low magnitude and were not dose responsive or consistent between sexes, and concludes that they are therefore not of biological relevance. Serum urea nitrogen and urine sodium values were significantly higher in the 120 mg/kg body weight/day females and males, respectively. Absolute and relative thyroid weights and relative kidney weights were slightly but significantly increased in females of the high dose group. Relative spleen weight was slightly but significantly increased in males of the 60 mg/kg bodyweight/day group. The applicant states that organ weights were within the historical range of control weights and were not accompanied by clinical, gross or pathological effects, and therefore were not toxicologically relevant. The applicant states no treatment-related side effects

were observed during this study. A NOAEL of 480 mg/kg body weight was determined (the highest dose administered).

23. The applicant also provides details of a 90 day study (see also **Annex 3**) in which male and female Sprague Dawley rats consumed MBSE in the diet at doses of 0, 60, 120 or 240 mg/kg body weight per day. Although some differences in body weight, body weight gain and food consumption were observed, the applicant states that these effects were not dose related or toxicologically significant. Differences in certain haematological parameters (total bilirubin and sodium) were observed and urinalysis revealed significantly lower potassium levels in the 60 mg/kg body weight per day dosed females. The applicant states these differences were not dose dependent, not observed in both sexes and not biologically relevant. The applicant concludes that a NOAEL of 240mg/kg body weight was established.

Mutagenicity and genotoxicity

24. Ames tests conducted with and without metabolic activation were negative and MBSE was non-genotoxic in Chinese hamster ovary cells with and without metabolic activation. The applicant indicates that MBSE is non-genotoxic *in vivo* as no evidence of micronucleus induction was observed in Swiss Albino (CD-1) mice receiving MBSE doses up to 2,500 mg/kg body weight. The applicant considers that these studies indicate that MBSE is not mutagenic or genotoxic.

Human studies

25. The applicant has provided details of two double-blind human studies conducted to investigate the efficacy of MBSE. The results obtained from these studies indicated that consumption of MBSE-containing peppermint mints or gum was effective in reducing oral malodour. The MBSE-containing products were well tolerated. The applicant has provided details in the form of a letter (see Appendix B of Annex 1) from the study investigator indicating that use/consumption of MBSE-containing mints and did not result in any adverse effects in any of the study participants in either study. However, the Secretariat notes that headache was reported by one of the sixty two subjects in one of the studies which was the investigators judged was possibly related to the test product (Annex 1, p35-36).

Toxicity studies and other studies conducted with magnolol, honokiol and crude magnolia bark preparations

26. Crude magnolia bark preparations have long been used as a component of traditional Asian remedies and the majority of published studies on the properties of magnolia bark have used the crude powdered bark or extracts

produced using various solvent extraction processes. The applicant acknowledges that the test articles used in these studies are not representative of MBSE, and states that they have reviewed the available literature for completeness (see pp45-46, Annex 1). This review includes a reference to mortality in animals fed a 'large doses' of Houpo, a decoction (water extract) of magnolia bark that is produced for muscle relaxing purposes. The applicant notes that although the composition of this decoction is poorly defined, the findings are likely to be due to the present of a water extracted alkaloid magnocurarine. which may have been present at concentrated levels in the Houpo. (see para 30 and 33, below)

27. Available data from acute and short-term animal toxicity studies carried out using these magnolia bark preparations are summarised below:.

Species/Strain/No. of Animals per Group per Sex	Study Duration	Route	Dose Levels and Test Item (mg/kg body weight/day)	Observations	Reference
Mice					
Male ICR	Single dose	Gavage & i.p.	Ethanollic extract of Magnolia bark extract	Oral LD ₅₀ > 50 g/kg bw i.p LD ₅₀ = 8.5 g/kg bw	Yang and Chen, 1997
*NS	Single dose	Gavage	Houpo 60 g/kg bw	No fatalities	Murakami <i>et al.</i> , 1933
*NS	Single dose	i.p.	Houpo deconcoction	i.p. LD ₅₀ = 6.12 g/kg bw	Basic Medical Sciences Department, 1973
Rats					
Sprague-Dawley Male (200-250g) N=8-15/group	14 day	Gavage	- Houpo dried powder 5 g/kg bw - Houpo aqueous suspension for higher dose 10 g/kg bw	- No effect on behaviour, food/water intake or, body weight. - ↓ ALA, and Creatine - ↑ BUN - ↑ urine protein	Yang and Chen, 1997
Rabbits					
*NS	Single dose	i.v.	n/a	No Mortality	Chang and But, 1986
Dogs					
*NS	Single dose	i.v.	Houpo 1 g/kg	No mortality	Chang and But, 1986
Cats					
*NS	Single dose	i.v.	Houpo deconcoction	Minimum Lethal Dose (MLD) = 4.25 mg/kg bw	Basic Medical Sciences Department, 1973

*NS = Not Stated

28. The applicant acknowledges that various magnolia bark preparations or components thereof are reported in the literature as having claimed therapeutic effects and reported clinical actions including: anxiolytic and central depressant activity, muscle relaxation, vasorelaxation, thermoregulatory and antipyretic effects and protective properties on gastrointestinal mucosal membranes. The

applicant also describes studies showing that magnolol and honokiol (the principal components of MBSE) may have beneficial effects on gastrointestinal function. The applicant does however highlight that exposure to magnolol and honokiol resulting from the use of MBSE-containing gum and mints is highly limited and therefore effects on gastrointestinal function in humans are not expected. The applicant also states that the findings of the other studies mentioned above are not considered relevant to the proposed use of MBSE in gums and mints. Further details of all the studies referred to in this paragraph can be found in Annex 1, p47-53.

29. The applicant also details a number of clinical trials investigating the use of Asian herbal remedies containing magnolia bark preparations which are not representative of MBSE (Annex 1, p54-60). The applicant states that these studies suggest that the herbal preparations are well tolerated, but only one of these studies (Garrison and Chambliss, 2006) evaluated safety using clinical and haematology endpoints. The Committee may wish to note that side effects were reported in the study by Kelman et al., 2008 for one of forty two subjects which included heartburn, hands shaking and thyroid dysfunction but the applicant considers that these effects were not significant test-article-related effects. Similar side effects were also reported for one of forty two subjects in the study of Garrison and Chambliss, 2006, although these authors concluded that the treatment was well tolerated. These studies are summarised below and detailed in Annex 1, p54-60:

Component	Source	Species	Route of Administration	Duration	Dose (mg/kg body weight)	Effect	Reference
Magnolol	Dietary supplement (Saiboku to) containing amongst other ingredients, magnolol	Human	Not reported	104 weeks	2.5 g Saiboku to 3 times daily (after meals); equivalent to 3.15 mg magnolol daily	Decrease in frequency of corticosteroid administration in responding bronchial asthmatics. No reduction in the frequency of corticosteroid administration among the non-responding subjects was reported. 'Responders' to Saiboku-To treatment exhibited higher free magnolol excretion rates than non-responders.	Homma et al., 1993a
Extract of <i>M. officinalis</i>	Dietary supplement containing amongst other ingredients, <i>M. officinalis</i>	Human	Oral	3 times a day for 6 weeks	250 mg of supplement (amount of extract of <i>M. officinalis</i> not reported)	Well tolerated. Significant weight gain for placebo group but no weight gain for treatment group. (tested in overweight females age 20 to 50)	Garrison and Chambliss, 2006; Kalman et al., 2006.
<i>Magnoliae cortex bark</i>	Dietary supplement Hange-koboku-to which also contained <i>Hoelen</i> , <i>Perillae herba</i> and <i>Zingiberis rhizoma</i>	Human	Oral	10 days	80 (of supplement)	Decrease in frequency of choking episodes caused by sleep apnoea	Hisanaga et al., 2002.
<i>Magnolia bark</i>	Dietary supplement Hange-koboku-to which also contained <i>Hoelen</i> , <i>Perillae herba</i> and <i>Zingiberis rhizoma</i>	Human	Oral	4 weeks for patient 1, 6 months for patient 2 and 2 years for patient 3	7.5 g of supplement/day	No effect in patient 1, a 59-year-old women suffering from a panic disorder and agoraphobia. Patient 2: symptoms of agoraphobia disappeared after 12 weeks treatment, no return of symptoms 2.5 years after discontinuation of supplement. Patient 3: relief of panic disorder and agoraphobia after 2 weeks treatment. Attempted discontinuation caused return of symptoms so treatments was continued.	Mantani et al., 2002.

Component	Source	Species	Route of Administration	Duration	Dose (mg/kg body weight)	Effect	Reference
Magnoliae cortex	Supplement Hange-koboku-to which also contained <i>Hoelen</i> , <i>Perillae herba</i> and <i>Zingiberis rhizoma</i>	Human	Oral	2 weeks	7.5 g of supplement/day	Gastric emptying rate increased in healthy volunteers but after a 2-week washout returned to normal. Gastric emptying rate increased in functional dyspepsia patients and a decrease in scores for abdominal pain, indigestion and constipation but not reflux or diarrhoea.	Oikawa <i>et al.</i> , 2005.
-	Banxia Houpo tang, which contains among other ingredients magnolia	-	Oral	4 weeks	4.5 g/day of herbal medicine	Decreased cough threshold in patients with aspiration pneumonia.	Iwasaki <i>et al.</i> , 2002
Extract of <i>M. officinalis</i>	Proprietary blend of patented extracts of the bark of <i>M. officinalis</i> (1.5% honokiol/capsule) and <i>Phellodendrom amurense</i> (0.1% berberine/capsule)	Human	Oral	6 weeks	750 mg of Relora® per day (approximately 11.25 mg/day of extract of <i>M. officinalis</i> was consumed)	Relora® reduced self-perceived stress and anxiety as well as temporary, transitory anxiety. No treatment-related safety concerns or significant adverse events were reported.	Kalman <i>et al.</i> , 2008

Safety of other phenolic and alkaloid constituents

30. In addition to the two biphenol compounds, magnolol and honokiol discussed previously, magnolia bark provides essential oils containing alpha, beta and gamma-eudesmol. Magnolia barks contain small amounts of plant alkaloids (magnocurarine and tubocurarine) and methyleugenol. MBSE is produced using supercritical carbon dioxide chemical extraction so that the content of essential oils and contaminants is significantly reduced.
31. The applicant states that although beta eudesmol has been reported to display antihypertensive effects in rats, such effects required intravenous or intraperitoneal doses of at least 10 or 30 mg/kg body weight respectively and no effects were observed at lower doses. The applicant's view is that as MBSE is intended for food use, these observations are not relevant to the current evaluation. The applicant remarks that beta eudesmol has also been reported to have curare like action in rodents but these findings were not consistent in the literature. The applicant highlights that MBSE in mints and gum would be several thousand to a million fold lower than doses reported to elicit significant biological effects and would therefore not be a safety concern.
32. The applicant states that several batches of MBSE were analysed and levels of methyleugenol were below the 20 ppm limit of this compound that has recently been set in EU flavourings legislation for its presence ready to eat savoury products¹. The applicant estimates that, based on the proposed consumption of MBSE in gum and mints, 90th percentile intakes in the highest consumers (teenagers) would result in daily exposures of 375 ng/person and would not appreciably increase the dietary intake of this compound relative to background exposure from food (17 micrograms to 18,000 micrograms/person).

33. Given the very low concentration of curine alkaloids magnocurarine and tubocurarine that are expected to be present in the extract (specifications limit alkaloids to a maximum of 100 ppm) and the fact that these compounds are poorly absorbed, the applicant concludes that these compounds will not be of toxicological concern as a result of consuming MBSE in mints and gum.

Allergenicity and Labelling

Annex 1, p 72

34. The applicant has indicated that the product will be labelled as appropriate and The in accordance with EU legislation relating to the labelling presentation and advertising of foodstuffs.
35. The applicant states that as MBSE is isolated using supercritical carbon dioxide extraction, it does not contain protein and therefore allergy concerns are not warranted. However, no data have been provided to illustrate the absence of protein in MBSE.

Consumer Access and Choice

36. The Secretariat has considered the issues of access and choice in relation to the MBSE. If authorised, MBSE would be available for use in products across the UK and subsequently in other EU Member States. In practical terms, access to products containing MBSE 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 MBSE will increase existing consumer choice. The consumer would be aware of the presence of the MBSE through the ingredient list and, most likely through special marketing that highlights its contribution to the foods.

¹ The flavourings legislation defines limits for a range of food types to which flavourings containing methyleugenol might be added. This list does not include chewing gum or other confectionery and “ready to eat savoury products” is probably the closest surrogate for comparison.

COMMITTEE ACTION REQUIRED

38. The Committee is asked whether the available data provide a satisfactory basis for evaluating the safety of this novel food ingredient.
39. If so the Committee is asked whether it is content to recommend approval of Wrigley's MBSE preparation as an ingredient in chewing gum and mints.
40. If not, the Committee is asked to indicate what additional data would be required.

**Secretariat
September 2009**

Annexes attached:

- Annex 1** Application for the approval of Magnolia Bark Extract (RESTRICTED)
A non-confidential version of the application dossier is available via
the ACNFP website www.acnfp.gov.uk
- Annex 2-** US post-Launch Monitoring information
- Annex 3** Report of 21 day and 90 day Toxicity Studies (Liu et al (2007),
Regulatory Toxicology and Pharmacology (29), 160-171.

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RESTRICTED

Application for approval of Magnolia Bark Extract

**Secretariat
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US Post Launch Monitoring Information

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Report of 21 day and 90 day Toxicity Studies carried out on MBSE

Liu et al (2007),. Regulatory Toxicology and Pharmacology (29), 160-171.

**Secretariat
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