A meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA) was held in Geneva, Switzerland, from 5 to 14 June 2012. The purpose of the meeting was to evaluate certain food additives, including flavouring agents.

Dr A. Mattia, Center for Food Safety and Applied Nutrition, United States Food and Drug Administration, served as Chairperson, and Mrs I. Meyland, Denmark, served as Vice-Chairperson.

Dr R. Ellis, Nutrition and Consumer Protection Division, Food and Agriculture Organization of the United Nations, and Dr A. Tritscher, Department of Food Safety and Zoonoses, World Health Organization, served as Joint Secretaries.

The present meeting was the seventy-sixth in a series of similar meetings. The tasks before the Committee were (a) to elaborate principles governing the evaluation of food additives, (b) to evaluate certain food additives and (c) to review and prepare specifications for selected food additives.

The report of the meeting will be published in the WHO Technical Report Series. Its presentation will be similar to that of previous reports—namely, general considerations, comments on specific substances, and recommendations for future work. An annex will include detailed tables (similar to the tables in this report) summarizing the main conclusions of the Committee in terms of acceptable or tolerable daily intakes and other toxicological and safety recommendations. Information on the specifications for the identity and purity of certain food additives examined by the Committee will also be included.

The participants in the meeting are listed in Annex 1. Further information required or desired is listed in Annex 2. Items of a general nature that the Committee would like to disseminate quickly are included in Annex 3.

Toxicological and dietary exposure monographs on most of the substances that were considered will be published in WHO Food Additives Series No. 67. New and revised specifications for the identity and purity of the compounds will be published in FAO JECFA Monographs 13.
More information on the work of JECFA is available at:


and


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Toxicological information and information on specifications

Food additives considered for specifications only

<table>
<thead>
<tr>
<th>Food additive</th>
<th>Specifications&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl cellulose</td>
<td>R</td>
</tr>
<tr>
<td>Mineral oil (medium viscosity)</td>
<td>N&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Modified starches</td>
<td>R</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>R</td>
</tr>
</tbody>
</table>

<sup>a</sup> N, new specifications; R, existing specifications revised.

<sup>b</sup> The existing specifications for mineral oil (medium and low viscosity) were withdrawn (see below).

Food additives evaluated toxicologically and assessed for dietary exposure

<table>
<thead>
<tr>
<th>Food additive</th>
<th>Specifications&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Acceptable or tolerable daily intakes and other toxicological recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium dihydrogen diphosphate</td>
<td>N</td>
<td>Although an acceptable daily intake (ADI) “not specified” has been established for a number of magnesium salts used as food additives, the estimated chronic dietary exposures to magnesium (960 mg/day for a 60 kg adult at the 95th percentile) from the proposed uses of magnesium dihydrogen diphosphate are up to twice the background exposures from food previously noted by the Committee (180–480 mg/day) and in the region of the minimum laxative effective dose of approximately 1000 mg of magnesium when taken as a single dose. The estimates of dietary exposure to phosphorus from the proposed uses of magnesium dihydrogen diphosphate were in the region of, or slightly exceeded, the maximum tolerable daily intake (MTDI) of 70 mg/kg body weight (bw) for phosphate salts, expressed as phosphorus, from this source alone. Thus, the MTDI is further exceeded when other sources of phosphate in the diet are taken into account. The Committee therefore concluded that the proposed use levels and food categories result in an estimated dietary exposure to magnesium dihydrogen diphosphate that is of potential concern. The Committee emphasized that in evaluating individual phosphate-containing food additives, there is a need for assessment of total dietary exposure to phosphorus. The Committee recommended that total dietary exposure to magnesium from food additives and other sources in the diet should be assessed. The information submitted to the Committee and in the scientific literature did not indicate that the MTDI of 70 mg/kg bw for phosphate salts, expressed as phosphorus, is insufficiently health protective. On the contrary, because the basis for its derivation might not be relevant to humans, it could be overly conservative. Therefore, the Committee recommended that the toxicological basis of the MTDI for phosphate salts expressed as phosphorus be reviewed.</td>
</tr>
</tbody>
</table>

<sup>a</sup> N, new specifications; R, existing specifications revised.
The Committee concluded that the newly submitted data did not adequately address its previous requests for information on the relevance to humans of the response of F344 and Sprague-Dawley rats to mineral oil (medium and low viscosity) classes II and III. The studies were conducted with a single administration, and it was not possible to predict the concentration in the target organ (liver) at steady state, or the potential for accumulation, in humans. Information requested at the forty-fourth meeting on compositional factors of mineral oils that influence absorption and toxicity had not been provided for materials meeting the criteria of mineral oil (medium and low viscosity) classes II and III.

The Committee noted that hydrocarbon deposits with carbon numbers consistent with mineral oils, including those of classes II and III, and associated lesions have been reported in human tissues, demonstrating the potential relevance to humans of the effects in the F344 rat. Because all blood levels were below the limit of detection in the single-dose human toxicokinetic study, it was not possible to reach conclusions on the rate of elimination of mineral oils in humans or on the concentration in the liver at steady state following prolonged exposure. Therefore, the new data did not provide information that would allow an ADI to be established based on internal exposure.

Similarly, it was not possible to establish an ADI based on external dose in the absence of information on the relative accumulation potential of classes II and III mineral oils in humans compared with rats.

The Committee noted that the temporary group ADI for mineral oil (medium and low viscosity) classes II and III had been established in 1995 and extended on a number of occasions. As data supporting the establishment of a full ADI had not been made available, the previously established temporary group ADI was withdrawn.

### Table: Specifications and Acceptable or tolerable daily intakes and other toxicological recommendations

<table>
<thead>
<tr>
<th>Food additive</th>
<th>Specifications</th>
<th>Acceptable or tolerable daily intakes and other toxicological recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oil (medium and low viscosity) classes II and III</td>
<td>W</td>
<td>The Committee concluded that the newly submitted data did not adequately address its previous requests for information on the relevance to humans of the response of F344 and Sprague-Dawley rats to mineral oil (medium and low viscosity) classes II and III. The studies were conducted with a single administration, and it was not possible to predict the concentration in the target organ (liver) at steady state, or the potential for accumulation, in humans. Information requested at the forty-fourth meeting on compositional factors of mineral oils that influence absorption and toxicity had not been provided for materials meeting the criteria of mineral oil (medium and low viscosity) classes II and III. The Committee noted that hydrocarbon deposits with carbon numbers consistent with mineral oils, including those of classes II and III, and associated lesions have been reported in human tissues, demonstrating the potential relevance to humans of the effects in the F344 rat. Because all blood levels were below the limit of detection in the single-dose human toxicokinetic study, it was not possible to reach conclusions on the rate of elimination of mineral oils in humans or on the concentration in the liver at steady state following prolonged exposure. Therefore, the new data did not provide information that would allow an ADI to be established based on internal exposure. Similarly, it was not possible to establish an ADI based on external dose in the absence of information on the relative accumulation potential of classes II and III mineral oils in humans compared with rats. The Committee noted that the temporary group ADI for mineral oil (medium and low viscosity) classes II and III had been established in 1995 and extended on a number of occasions. As data supporting the establishment of a full ADI had not been made available, the previously established temporary group ADI was withdrawn.</td>
</tr>
<tr>
<td>3-Phytase from <em>Aspergillus niger</em> expressed in <em>Aspergillus niger</em></td>
<td>N</td>
<td>Comparing the conservative exposure estimate with the no-observed-adverse-effect level (NOAEL) from the 13-week study of oral toxicity in rats, the margin of exposure is approximately 250. The Committee allocated an ADI “not specified” for 3-phytase enzyme preparation from <em>A. niger</em> expressed in <em>A. niger</em> used in the applications specified and in accordance with good manufacturing practice.</td>
</tr>
<tr>
<td>Serine protease (chymotrypsin) from <em>Nocardiopsis prasina</em> expressed in <em>Bacillus licheniformis</em></td>
<td>N</td>
<td>Comparing the exposure estimate with the NOAEL from the 13-week study of oral toxicity in rats, the margin of exposure is approximately 350. The Committee allocated an ADI “not specified” for serine protease (chymotrypsin) enzyme preparation from <em>N. prasina</em> expressed in the production strain <em>B. licheniformis</em>, used in the applications specified and in accordance with good manufacturing practice.</td>
</tr>
</tbody>
</table>
Food additive Specifications\textsuperscript{a} Acceptable or tolerable daily intakes and other toxicological recommendations

| Serine protease (trypsin) from *Fusarium oxysporum* expressed in *Fusarium venenatum* | N | Comparing the dietary exposure estimate with the NOAEL from the 13-week study of oral toxicity in rats, the margin of exposure is approximately 1200. The Committee allocated an ADI “not specified”\textsuperscript{b} for serine protease (trypsin) enzyme preparation from *F. oxysporum* expressed in the production strain *F. venenatum*, used in the applications specified and in accordance with good manufacturing practice. |

\textsuperscript{a} N. new specifications; W. existing specifications withdrawn.

\textsuperscript{b} ADI “not specified” is used to refer to a food substance of very low toxicity that, on the basis of the available data (chemical, biochemical, toxicological and other) and the total dietary exposure to the substance arising from its use at the levels necessary to achieve the desired effects and from its acceptable background levels in food, does not, in the opinion of the Committee, represent a hazard to health. For that reason, and for the reasons stated in the individual evaluations, the establishment of an ADI expressed in numerical form is not deemed necessary. An additive meeting this criterion must be used within the bounds of good manufacturing practice—i.e. it should be technologically efficacious and should be used at the lowest level necessary to achieve this effect, it should not conceal food of inferior quality or adulterated food, and it should not create a nutritional imbalance.

**Flavouring agents evaluated by the Procedure for the Safety Evaluation of Flavouring Agents\textsuperscript{1}**

**A. Aliphatic and aromatic amines and amides**

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications\textsuperscript{a}</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural class I</td>
<td>2-Aminoacetophenone</td>
<td>2043</td>
<td>N</td>
</tr>
<tr>
<td>Structural class III</td>
<td>(2E,6EZ,8E)-N-(2-Methylpropyl)-2,6,8-decatrienamide</td>
<td>2077</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>(2S,5R)-N-[4-(2-Amino-2-oxoethyl)phenyl]-5-methyl-2-((propan-2-yl)cyclohexanecarboxamide</td>
<td>2078</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>(1R,2S,5R)-N-(4-Methoxyphenyl)-5-methyl-2-(1-methylethyl)cyclohexanecarboxamide</td>
<td>2079</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>N-Cyclopropyl-5-methyl-2-isopropylcyclohexanecarboxamide</td>
<td>2080</td>
<td>N</td>
</tr>
</tbody>
</table>

\textsuperscript{1} The flavouring agent 2-phenyl-2-methyl-2-hexenal (No. 2069) was submitted for evaluation in the group of aliphatic linear α,β-unsaturated aldehydes, acids and related alcohols, acetals and esters; the Committee considered that it did not belong to this group of flavouring agents, and therefore it was not further considered. The safety of the submitted substance (3R)-4-[[1S]-1-benzyl-2-methoxy-2-oxo-ethyl]amino]-3-[3-(3-hydroxy-4-methoxy-phenyl)propylamino]-4-oxo-butyric acid hydrate (Advantame, No. 2124) in the group of amino acids and related substances was not assessed; the Committee decided that it would not be appropriate to evaluate this substance as a flavouring agent, because it is a low-calorie intense sweetener. The safety of the two submitted substances rebaudioside C (No. 2168) and rebaudioside A (No. 2169) in the group of phenol and phenol derivatives was not assessed; the Committee decided that it would not be appropriate to evaluate these substances as flavouring agents, as they had already been evaluated as food additives (sweeteners).
Summary report of the seventy-sixth meeting of JECFA

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specificationsa</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-(2-Methylcyclohexyl)-2,3,4,5,6-pentafluorobenzamide</td>
<td>2081</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>3-[4-Amino-2,2-dioxido-1H-2,1,3-benzothiadiazin-5-yl]oxy]-2,2-dimethyl-N-propylpropanamide</td>
<td>2082</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

a N, new specifications.

B. Aliphatic and aromatic ethers

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specificationsa</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class II</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,6-Dimethyl-2,3,3a,4,5,7a-hexahydrobenzofuran</td>
<td>2133</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Ethyl linalyl ether</td>
<td>2134</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Linalool oxide pyranoid</td>
<td>2135</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Nerolidol oxide</td>
<td>2137</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td>Methyl hexyl ether</td>
<td>2138</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Myrcenyl methyl ether</td>
<td>2139</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Digeranyl ether</td>
<td>2142</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><strong>Structural class III</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoamyl phenethyl ether</td>
<td>2136</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>5-Isopropyl-2,6-diethyl-2-methyltetrahydro-2H-pyran</td>
<td>2140</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Butyl β-naphthyl ether</td>
<td>2141</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

a N, new specifications.

C. Aliphatic hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids and related esters, sulfides, disulfides and ethers containing furan substitution

The Committee concluded that the Procedure could not be applied to this group because of unresolved toxicological concerns. Studies that could assist in the safety evaluation include investigations of the influence of the nature and position of furan ring substitutions on metabolism and covalent binding to macromolecules, demonstration of the ring opening and reactivity of the resulting products. Depending on the findings, additional genotoxicity or other studies might be needed.
## Flavouring agent Specifications

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Acetyl-3,5-dimethylfuran</td>
<td>1505</td>
<td>M</td>
</tr>
<tr>
<td>2-Butyrylfuran</td>
<td>1507</td>
<td>M</td>
</tr>
<tr>
<td>(2-Furyl)-2-propanone</td>
<td>1508</td>
<td>M</td>
</tr>
<tr>
<td>2-Pentanoylfuran</td>
<td>1509</td>
<td>M</td>
</tr>
<tr>
<td>1-(2-Furyl)butan-3-one</td>
<td>1510</td>
<td>M</td>
</tr>
<tr>
<td>4-(2-Furyl)-3-butene-2-one</td>
<td>1511</td>
<td>M</td>
</tr>
<tr>
<td>Ethyl 3-(2-furyl)propanoate</td>
<td>1513</td>
<td>M</td>
</tr>
<tr>
<td>Isobutyl 3-(2-furan)propionate</td>
<td>1514</td>
<td>M</td>
</tr>
<tr>
<td>Isoamyl 3-(2-furan)propionate</td>
<td>1515</td>
<td>M</td>
</tr>
<tr>
<td>Isoamyl 4-(2-furan)butyrate</td>
<td>1516</td>
<td>M</td>
</tr>
<tr>
<td>Phenethyl 2-furoate</td>
<td>1517</td>
<td>M</td>
</tr>
<tr>
<td>Furfuryl methyl ether</td>
<td>1520</td>
<td>M</td>
</tr>
<tr>
<td>Ethyl furfuryl ether</td>
<td>1521</td>
<td>M</td>
</tr>
<tr>
<td>Difurfuryl ether</td>
<td>1522</td>
<td>M</td>
</tr>
<tr>
<td>2,5-Dimethyl-3-furanthiol acetate</td>
<td>1523</td>
<td>M</td>
</tr>
<tr>
<td>Furfuryl 2-methyl-3-furyl disulfide</td>
<td>1524</td>
<td>M</td>
</tr>
<tr>
<td>3-[(2-Methyl-3-furyl)thio]-2-butane</td>
<td>1525</td>
<td>M</td>
</tr>
<tr>
<td>O-Ethyl S-(2-furylmethyl)thiocarbonate</td>
<td>1526</td>
<td>M</td>
</tr>
<tr>
<td>2,3-Dimethylbenzofuran</td>
<td>1495</td>
<td>M</td>
</tr>
<tr>
<td>2,4-Difurfurylfuran</td>
<td>1496</td>
<td>M</td>
</tr>
<tr>
<td>2-Methyl-3(2-furyl)acrolein</td>
<td>1498</td>
<td>M</td>
</tr>
<tr>
<td>3-(5-Methyl-2-furyl)butanal</td>
<td>1500</td>
<td>M</td>
</tr>
<tr>
<td>2-Furfurylidene-butyraldehyde</td>
<td>1501</td>
<td>M</td>
</tr>
<tr>
<td>2-Phenyl-3-(2-furyl)prop-2-enal</td>
<td>1502</td>
<td>M</td>
</tr>
<tr>
<td>3-Acetyl-2,5-dimethylfuran</td>
<td>1506</td>
<td>M</td>
</tr>
<tr>
<td>Pentyl 2-furyl ketone</td>
<td>1512</td>
<td>M</td>
</tr>
<tr>
<td>Propyl 2-furanacrylate</td>
<td>1518</td>
<td>M</td>
</tr>
<tr>
<td>2,5-Dimethyl-3-oxo-(2H)-fur-4-yl butyrate</td>
<td>1519</td>
<td>M</td>
</tr>
<tr>
<td>(E)-Ethyl 3-(2-furyl)acrylate</td>
<td>2103</td>
<td>N</td>
</tr>
<tr>
<td>Di-2-furylmethane</td>
<td>2104</td>
<td>N</td>
</tr>
<tr>
<td>2-Methylbenzofuran</td>
<td>2105</td>
<td>N</td>
</tr>
</tbody>
</table>

### D. Aliphatic linear α,β-unsaturated aldehydes, acids and related alcohols, acetals and esters

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>trans-2-Nonenyl acetate</td>
<td>2163</td>
<td>N</td>
</tr>
<tr>
<td>Propyl sorbate</td>
<td>2164</td>
<td>N</td>
</tr>
<tr>
<td>cis-2-Octenol</td>
<td>2165</td>
<td>N</td>
</tr>
<tr>
<td>trans-2-Tridecenol</td>
<td>2166</td>
<td>N</td>
</tr>
<tr>
<td>Ethyl 2-hexenoate (mixture of isomers)</td>
<td>2167</td>
<td>N</td>
</tr>
</tbody>
</table>

### Notes
- M, specifications maintained; N, new specifications.
- N, new specifications.
### E. Amino acids and related substances

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class I</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-Ornithine (as the monochlorohydrate)</td>
<td>2120</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>L-Alanyl-L-glutamine</td>
<td>2121</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>L-Methionylglycine</td>
<td>2122</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Glutamyl-valyl-glycine</td>
<td>2123</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

*a* N, new specifications.

The Committee considered that the use of the Procedure for the Safety Evaluation of Flavouring Agents was inappropriate for two members of this group—namely, L-isoleucine (No. 2118) and L-threonine (No. 2119). In view of the fact that these substances are macronutrients and normal components of protein, the Committee concluded that the use of these substances as flavouring agents would not raise any safety concerns at current estimated dietary exposures.

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Isoleucine</td>
<td>2118</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>L-Threonine</td>
<td>2119</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

*a* N, new specifications.

### F. Epoxides

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class III</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl α-ethyl-β-methyl-β-phenylglycidate</td>
<td>2143</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Methyl β-phenylglycidate</td>
<td>2144</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>d-8-p-Menthene-1,2-epoxide</td>
<td>2145</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>l-8-p-Menthene-1,2-epoxide</td>
<td>2146</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2,3-Epoxoctanal</td>
<td>2147</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td>2,3-Epoxyheptanal</td>
<td>2148</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td>2,3-Epoxydecanal</td>
<td>2149</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
</tbody>
</table>

*a* N, new specifications.

### G. Furfuryl alcohol and related substances

New in vitro and in vivo studies raise concerns regarding the potential genotoxicity of furfuryl alcohol and derivatives that can be metabolized to furfuryl alcohol (e.g. furfuryl esters). The Committee concluded that this group of flavouring agents could not be evaluated according to the Procedure because of the unresolved concerns regarding genotoxicity. In addition, the group ADI previously established by the Committee will need to be reconsidered at a future meeting.
### Flavouring agent

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications a</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-Methylfurfuryl alcohol</td>
<td>2099</td>
<td>N</td>
</tr>
<tr>
<td>Furfural propylene glycol acetal</td>
<td>2100</td>
<td>N</td>
</tr>
<tr>
<td>Furfuryl formate</td>
<td>2101</td>
<td>N</td>
</tr>
<tr>
<td>Furfuryl decanoate</td>
<td>2102</td>
<td>N</td>
</tr>
</tbody>
</table>

a N, new specifications.

### H. Linear and branched-chain aliphatic, unsaturated, unconjugated alcohols, aldehydes, acids and related esters

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications a</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class I</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>cis</em>-3-Nonen-1-ol</td>
<td>2177</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><em>trans</em>-3-Nonen-1-ol</td>
<td>2178</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><em>cis,cis</em>-3,6-Nonadienyl acetate</td>
<td>2179</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><em>trans</em>-3-Hexenyl acetate</td>
<td>2180</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><em>cis</em>-3-Hexenoic acid</td>
<td>2181</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><em>cis</em>-3-Nonenyl acetate</td>
<td>2182</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><em>cis</em>-6-Nonenyl acetate</td>
<td>2183</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>*(Z)-5-Octenyl acetate</td>
<td>2184</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>*(E)-4-Undecenal</td>
<td>2185</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

a N, new specifications.

### I. Miscellaneous nitrogen-containing compounds

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications a</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class II</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-((3,5-Dimethylisoxazol-4-yl)methyl)-1H-pyrazol-4-yl-1-(3-hydroxybenzyl)-imidazolidine-2,4-dione</td>
<td>2161</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>3-((3,5-Dimethylisoxazol-4-yl)methyl)-1H-pyrazol-4-yl-1-(3-hydroxybenzyl)-5,5-dimethylimidazolidine-2,4-dione</td>
<td>2162</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

a N, new specifications.

### J. Phenol and phenol derivatives

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications a</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class III</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3’,7-Dihydroxy-4’-methoxyflavan</td>
<td>2170</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Trilobatin</td>
<td>2171</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>*(±)-Eriodictyol</td>
<td>2172</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

a N, new specifications.
### K. Pyrazine derivatives

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class I</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isopropenylpyrazine</td>
<td>2125</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>5-Ethyl-2,3-dimethylpyrazine</td>
<td>2126</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Methyl-5-vinylpyrazine</td>
<td>2127</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>A mixture of 2,5-dimethyl-6,7-dihydro-5H-cyclopentapyrazine and 2,7-dimethyl-6,7-dihydro-5H-cyclopentapyrazine</td>
<td>2128</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Ethoxy-3-isopropylpyrazine</td>
<td>2065</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><strong>Structural class II</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,5- and 3,6-Dimethyl-2-isobutylpyrazine</td>
<td>2130</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Ethoxy-3-ethylpyrazine</td>
<td>2131</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Ethyl-3-methylthiopyrazine</td>
<td>2132</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

<sup>a</sup> N, new specifications.

### L. Pyridine, pyrrole and quinoline and related N-heterocyclic derivatives

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class II</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Ethyl-2-pyrrolocarboxaldehyde</td>
<td>2150</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td>2,4-Dimethylpyridine</td>
<td>2151</td>
<td>N</td>
<td>No safety concern (temporary)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>1-Methyl-1H-pyrrole-2-carboxaldehyde</td>
<td>2152</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td><strong>Structural class III</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Acetyl-4-isopropenylpyridine</td>
<td>2153</td>
<td>T</td>
<td>No safety concern</td>
</tr>
<tr>
<td>4-Acetyl-2-isopropenylpyridine</td>
<td>2154</td>
<td>T</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Acetyl-4-isopropylpyridine</td>
<td>2155</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Methoxypyridine</td>
<td>2156</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td>6-Methoxyquinoline</td>
<td>2157</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>1-(2-Hydroxyphenyl)-3-(pyridine-4-yl)propan-1-one</td>
<td>2158</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td>1-(2-Hydroxy-4-isobutoxyphenyl)-3-(pyridine-2-yl)propan-1-one</td>
<td>2159</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
<tr>
<td>1-(2-Hydroxy-4-methoxyphenyl)-3-(pyridine-2-yl)propan-1-one</td>
<td>2160</td>
<td>N</td>
<td>Additional data required to complete evaluation</td>
</tr>
</tbody>
</table>

<sup>a</sup> N, new specifications; T, tentative specifications.

<sup>b</sup> The evaluation for No. 2151 is temporary pending receipt of additional toxicological data.
M. Saturated aliphatic acyclic branched-chain primary alcohols, aldehydes and acids

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Methylhexanal</td>
<td>2173</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>6-Methylheptanal</td>
<td>2174</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>6-Methyloctanal</td>
<td>2175</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>3,7-Dimethyloctanal</td>
<td>2176</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

a N, new specifications.

N. Simple aliphatic and aromatic sulfides and thiols

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subgroup ii: Acyclic sulfides with oxidized side-chains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural class I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-(Methylthio)-3-octanone</td>
<td>2086</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Subgroup iii: Cyclic sulfides</td>
<td></td>
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</tr>
<tr>
<td>Structural class III</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4-Methyl-2-propyl-1,3-oxathiane</td>
<td>2089</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Subgroup iv: Simple thiols</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural class I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Pentanethiol</td>
<td>2083</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Subgroup v: Thiols with oxidized side-chains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural class I</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4-Mercapto-3-methyl-2-butanol</td>
<td>2084</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Ethyl 2-mercapto-2-methylpropionate</td>
<td>2085</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Subgroup vi: Dithiols</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural class III</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1,1-Propanedithiol</td>
<td>2087</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Subgroup vii: Disulfides with oxidized side-chains</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Structural class III</td>
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<td></td>
</tr>
<tr>
<td>1-Methyldithio-2-propanone</td>
<td>2088</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

a N, new specifications.

O. Sulfur-containing heterocyclic compounds

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Pentylthiophene</td>
<td>2106</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Acetyl-5-methylthiophene</td>
<td>2107</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>Flavouring agent</td>
<td>No.</td>
<td>Specifications</td>
<td>Conclusion based on current estimated dietary exposure</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>------</td>
<td>---------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>2-Pentylthiazole</td>
<td>2108</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>4,5-Dimethyl-2-isobutylthiazole</td>
<td>2109</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td><strong>Structural class III</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,4-Dimethylthiophene</td>
<td>2110</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Thienuymethanol</td>
<td>2111</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>1-(2-Thienyl)ethanethiol</td>
<td>2112</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>5-Ethyl-2-methylthiazole</td>
<td>2113</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Ethyl-2,5-dihydro-4-methylthiazole</td>
<td>2114</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>4-Methyl-3-thiazoline</td>
<td>2115</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Ethyl-4,6-dimethylidihydro-1,3,5-dithiane</td>
<td>2116</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>4-Amino-5,6-dimethylthieno[2,3-d]pyrimidin-2(1H)-one hydrochloride</td>
<td>2117</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

*a* N, new specifications.

**P. Sulfur-substituted furan derivatives**

<table>
<thead>
<tr>
<th>Flavouring agent</th>
<th>No.</th>
<th>Specifications</th>
<th>Conclusion based on current estimated dietary exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural class III</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-Methylfuranyl mercaptan</td>
<td>2090</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Methyl-3-furyl methylthiometyl disulfide</td>
<td>2091</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Methyl-3-furyl 2-methyl-3-tetrahydrofuranyl disulfide</td>
<td>2092</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Tetrahydrofurfuryl 2-mercaptopropionate</td>
<td>2093</td>
<td>N</td>
<td><strong>Additional data required to complete evaluation</strong></td>
</tr>
<tr>
<td>Methyl 3-(furfurylthio)propionate</td>
<td>2094</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>3-[(2-Methyl-3-furyl)thio]butanal</td>
<td>2095</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>1-(2-Furfurylthio)-propanone</td>
<td>2096</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Methyl-4,5-dihydrofuran-3-thiol</td>
<td>2097</td>
<td>N</td>
<td>No safety concern</td>
</tr>
<tr>
<td>2-Methyltetrahydrofuran-3-thiol acetate</td>
<td>2098</td>
<td>N</td>
<td>No safety concern</td>
</tr>
</tbody>
</table>

*a* N, new specifications.
Annex 1

Seventy-sixth meeting of the Joint FAO/WHO Expert Committee on Food Additives

Geneva, 5–14 June 2012

Members

Professor J. Alexander, Norwegian Institute of Public Health, Oslo, Norway
Dr M. DiNovi, Center for Food Safety and Applied Nutrition, Food and Drug Administration, College Park, MD, USA
Dr Y. Kawamura, Division of Food Additives, National Institute of Health Sciences, Tokyo, Japan
Dr A. Mattia, Center for Food Safety and Applied Nutrition, Food and Drug Administration, College Park, MD, USA (Chairperson)
Mrs I. Meyland, Birkerød, Denmark (Vice-Chairperson)
Dr U. Mueller, Food Standards Australia New Zealand, Barton, ACT, Australia
Professor A. Renwick, Emeritus Professor, Faculty of Medicine, University of Southampton, Southampton, England (Joint Rapporteur)
Dr P. Sinhaseni, Community Risk Analysis Research and Development Center, Bangkok, Thailand
Dr J. Schlatter, Nutritional and Toxicological Risks Section, Swiss Federal Office of Public Health, Zurich, Switzerland
Dr M. Veerabhadra Rao, Department of the President’s Affairs, Al Ain, United Arab Emirates
Mrs H. Wallin, Finnish Food Safety Authority (Evira), Helsinki, Finland (Joint Rapporteur)

Secretariat

Dr D. Benford, Food Standards Agency, London, England (WHO Expert)
Dr A. Bruno, Joint FAO/WHO Food Standards Programme, Food and Agriculture Organization of the United Nations, Rome, Italy (FAO Codex Secretariat)
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Dr B. Fields, Food Standards Australia New Zealand, Canberra, ACT, Australia (WHO Expert)
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Dr F. Kayama, School of Medicine, Jichi Medical University, Tochigi, Japan (WHO Expert)
Dr J.-C. Leblanc, Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail (ANSES), Maisons-Alfort, France (FAO Expert)
Dr S.Y. Lee, Department of Food Safety and Zoonoses, World Health Organization, Geneva, Switzerland (WHO Staff Member)
Professor S.M. Mahungu, Department of Dairy, Food Science and Technology, Egerton University, Egerton, Kenya (FAO Expert)
Professor S. Rath, Department of Analytical Chemistry, University of Campinas, Campinas, São Paulo, Brazil (FAO Expert)
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Professor I.G. Sipes, College of Medicine, University of Arizona, Tucson, AZ, USA (WHO Expert)
Dr J.R. Srinivasan, Center for Food Safety and Applied Nutrition, Food and Drug Administration, College Park, MD, USA (FAO Expert)
Dr A. Tritscher, Department of Food Safety and Zoonoses, World Health Organization, Geneva, Switzerland (WHO Joint Secretary)
Dr T. Umemura, Biological Safety Research Center, National Institute of Health Sciences, Tokyo, Japan (WHO Expert)
Professor G.M. Williams, Department of Pathology, New York Medical College, Valhalla, NY, USA (WHO Expert)
Annex 2

Further information required or desired

Paprika extract
For the revision of the specification for paprika extract, no data were received. Based on the commitment by the sponsor to provide data for a future meeting, this evaluation was postponed.

Specifications for flavouring agents
The specifications for Nos 2153 (2-acetyl-4-isopropenylpyridine) and 2154 (4-acetyl-2-isopropenylpyridine) were made tentative at the current meeting because the submitted information was insufficient. The two flavouring agents are positional isomers, and the Committee concluded that the current specifications would not allow for differentiation between the two substances. Information that could be used to differentiate the two substances (e.g. optical [specific] rotation) is requested.

Aliphatic hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids and related esters, sulfides, disulfides and ethers containing furan substitution
The Committee concluded that the Procedure could not be applied to this group because of unresolved toxicological concerns. Studies that could assist in the safety evaluation include investigations of the influence of the nature and position of furan ring substitutions on metabolism and covalent binding to macromolecules, demonstration of the ring opening and reactivity of the resulting products. Depending on the findings, additional genotoxicity or other studies might be needed.

Furfuryl alcohol and related substances
New in vitro and in vivo studies raise concerns regarding the potential genotoxicity of furfuryl alcohol and derivatives that can be metabolized to furfuryl alcohol (e.g. furfuryl esters). The Committee concluded that this group of flavouring agents could not be evaluated according to the Procedure because of the unresolved concerns regarding genotoxicity. In addition, the group ADI previously established by the Committee will need to be reconsidered at a future meeting.

Pyridine, pyrrole and quinoline derivatives
For 2,4-dimethylpyridine (No. 2151), the safety evaluation was made temporary, pending the submission of the full report of the critical study for the next JECFA meeting at which flavouring agents are evaluated.

Additional data required to complete the evaluation according to the Procedure for the Safety Evaluation of Flavouring Agents
Additional data are required to complete the toxicological evaluations of 11 flavouring agents (Nos 2093, 2137, 2147–2150, 2152, 2156 and 2158–2160).
Annex 3

General considerations

An edited version of this section will appear in the report of the seventy-sixth meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA). It is reproduced here so that the information can be disseminated quickly. This draft will be subject to editing.

Statement on the inclusion of secondary additives in a specifications monograph

Some food additives may require the addition of one or more secondary additives to ensure their stability and effective use in foods. Examples may include, but are not limited to, the use of antioxidants or preservatives to promote the stability of a primary additive or anti-caking agents, diluents or emulsifiers to ensure its technological function. In cases where the Committee has considered the use of a secondary additive or class of additives with a particular technological purpose to be appropriate, a short statement allowing for the addition of secondary additives will be included in the definition section of the specifications monograph.

Accordingly, any secondary additive must have been determined to be safe for use in food by the Committee. They should be of food-grade quality and used at the minimum level required to achieve the intended technological function.

Analytical method for the determination of phosphorus as phosphorus pentoxide

The Committee at its current meeting noted that the titrimetric and gravimetric methods in the Combined Compendium of Food Additive Specifications, Volume 4 (FAO JECFA Monographs 1, 2006), are not reliable for the determination of phosphorus as phosphorus pentoxide. The Committee may consider replacing corresponding methods for other diphosphate additives at a future meeting.

Food additives containing aluminium and/or silicon

The Committee, while reviewing the specifications of food additives containing aluminium and silicon, considered it relevant to update the test methods for the determination of aluminium oxide and silicon dioxide. Some of the test methods for certain of these food additives use potentially corrosive or hazardous reagents that are not always permitted in current laboratory practices because of safety concerns. The Committee also noted that the specifications for some additives were rather old or tentative and that it requires additional information to revise the specifications. Consequently, the Committee recommends placing these additives on the agenda for re-evaluation.

Test methods for modified starches

In addition to revising the specific test for degree of substitution of starch sodium octenylsuccinate (INS No. 1450) in the specifications monograph of modified starches, the Committee considered that it would be necessary to align the description of the test to be consistent with the end product specifications at a future meeting. In addition, the Committee considered that it would also be necessary to revise the specifications for all the modified starches, including test methods.
Improvements to the submission of specifications data for flavouring agents

The Committee at its current meeting made recommendations to improve the quality of data submitted for flavouring agents. These include submission of raw data (e.g. spectra, molecular structure, composition of isomers, physical and chemical properties, and method for determination of minimum assay) used to establish the specifications for each flavouring agent at submission. In addition, tabulated summary data (e.g. spreadsheet) for all the flavouring agents should be provided. It is strongly recommended that for each flavouring agent, the following spectra, with detailed experimental conditions, be provided: nuclear magnetic resonance spectrometry, Fourier-transform infrared spectroscopy and mass spectrometry. Spectra should be of such quality that they can be used for identification purposes. Data provided should be consistent with the product in commerce. The data should be provided in a timely manner that permits the Committee to perform a thorough review. All data should receive a thorough quality control review by the sponsor before submission to the Committee.

Improvements to the presentation of specifications data for flavouring agents

The Committee recommends that the chemical structures for the flavouring agents be included as part of the specifications presented online. In addition, an annotation of the method used to determine the minimum assay value of the flavouring agent should be included. The Committee also noted that it would be more useful to separate the current specification for “Physical Form/Odour” into two separate entries. It was also recommended that a separate entry for melting point be included in the specifications for flavouring agents.

Evaluation of flavour modifiers

A number of the flavouring agents submitted to the present meeting (Nos 2077, 2080–2082, 2119, 2121, 2123, 2158–2162 and 2170–2172) modify the flavour of other dietary components. At the present meeting, the Committee has adopted the term flavour modifier for all agents that alter or mask the flavours of flavouring agents or other dietary components.

The Committee noted that the chemical structures of some flavour modifiers (e.g. Nos 2081, 2082, 2161, 2162 and 2170–2172) have characteristics that have not been found in previously evaluated flavouring agents. The flavour modifiers evaluated at the present meeting had low estimated dietary exposures and could be evaluated using the Procedure for the Safety Evaluation of Flavouring Agents. The Committee agreed that flavour modifiers would be identified in evaluations of flavouring agents. The Committee emphasized that the safety evaluations undertaken on flavouring agents and flavour modifiers relate to the use levels submitted to the Committee for evaluation.