資料１－３

ヒドロキシプロピルセルロースに関する追加資料

○　Food-science and techniques. Reports of the Science Committee for Food (Thirty- second series). The European Commission (1994).（抜粋）

1992 年に行われた EU の食品科学委員会（SCF）第 32 回会合の報告書。5 種の加工セルロース（メチルセルロース、ヒドロキシプロピルセルロース、ヒドロキシプロピルメチルセルロース、エチルメチルセルロース及びカルボキシメチルセルロースナトリウム）について、第 35 回 JECFA の評価を受けた再評価を行い、これら 5 種の加工セルロースの ADI を「特定しない」と評価した。

FOOD — SCIENCE AND TECHNIQUES

Reports of the Scientific Committee for Food

(Thirty-second series)

EUROPEAN COMMISSION

European Commission

food science and techniques

Reports of the Scientific Committee for Food

(32nd series)

Opinions of the Scientific Committee for Food on:

An activated lactoperoxidase system
Re-evaluation of five modified celluloses
Addendum concerning enzymatically hydrolysed carboxymethylcellulose
The potential risk to health presented by lead in food and drink
The evaluation of sucrose acetate isobutyrate (SAIB)
The acceptability of wines treated with certain ion-exchange resins
Certain additives for use in infant formulas, follow-on formulas and weaning foods
Carrageenan

Revisions of previous opinions on:

Alginates
Modified starches – starch sodium octenyl succinate
Extraction solvents – dichlormethane
Glycerol esters of wood resin
Food irradiation: use in relation to Camembert cheeses

Directorate-General Industry
1994

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OPINION ON RE-EVALUATION OF FIVE MODIFIED CELLULOSES

EXPRESSED ON 13 MARCH 1992

1. Terms of reference

The Committee was asked to re-evaluate in the light of the most recent information on technology and toxicology, the modified celluloses permitted by the Council Directive relating to emulsifiers, stabilisers, thickeners and gelling agents for use in foodstuffs (74/329/EEC, as amended).

2. Background

Five modified celluloses are permitted in the EEC under the Directive on Emulsifiers, Stabilizers and Thickening Agents (74/329/EEC). These comprise methylcellulose (E 461), hydroxypropylcellulose (E 463), hydroxypropylmethylcellulose (E 464), ethylmethylcellulose (E 465) and sodiumcarboxy-methylcellulose (E 466). Specifications for these five substances have been published in the Directive 78/663/EEC. Of these compounds only E 466 has been evaluated by the SCF in the 7th Series of Reports in 1978, when a group ADI of 25 mg/kg b.w. (previously established by JECFA in 1973) was endorsed together with the rider, that specifying a limit to the molecular weight was considered unnecessary. The Committee had not been asked at that time to evaluate the other permitted modified celluloses.

3. Discussion

JECFA has evaluated seven modified celluloses, the five substances in the EEC Directive as well as ethylcellulose and ethylhydroxyethylcellulose. That committee initially established a group ADI of 25 mg/kg b.w., based on the traditional procedure of using the highest NEL obtainable in lifespan studies without causing any nutritional effects and a safety factor of 100. It was realised subsequently that food additives which are poorly, if at all, absorbed and practically non-toxic when tested extensively in animals, do not produce adverse effects in feeding studies, even at the maximum levels of dietary incorporation consistent with mild adverse nutrition of the test animals. The observed gastro-intestinal effects were clearly produced by the physical effects of the bulk and the hydrophilic properties of the ingested materials. It was therefore illogical to persist with the traditional evaluation procedures for these substances.

If, in addition, information on the chemical structure, absorption, tissue distribution, excretion, metabolism and human exposure together with appropriate clinical observations suggested, that no true toxic effects could be expected even after high intakes, then a numerical limitation of the ADI becomes unnecessary. JECFA therefore allocated, on the basis of these arguments, in 1990 a group ADI "not specified", as had been done with other bulking food additives, to the seven modified celluloses evaluated in its 35th session. The committee made, however, a general comment on the need to consider the possible laxative effect of an excessive total dietary consumption of all bulking agents, particularly in view of the additivity of this effect. It therefore suggested that some controls to limit consumption should be introduced.

A review of the available data, summarized in the attached table, on the five modified celluloses listed in the Directive 74/329/EEC, which covered chemical structure, biochemical behaviour, toxicological properties and clinical observations in man, demonstrates that modified celluloses are practically non-absorbed by mice, rats rabbits and man, are of low toxicity and do not possess carcinogenic properties. Only E 461 and E 466 have been tested for mutagenic properties, both substances yielding no evidence of any mutagenic potential. The three modified celluloses E 461, E 463 and E 466 have been shown to cause no embryotoxic or teratogenic effects. The human data, covering ingestion of amounts up to 30 g/day/person, suggest the usual effects of undigestible fibre on the bulk, the physical consistency, and the frequency of faeces without however causing clinically significant diarrhoea at this level of ingestion. Information available to the Committee indicates that average daily intakes from present uses are well within this range.

4. Conclusions

Consistent with its evaluation of bulking agents with similar biological properties, the Committee allocated an ADI "not specified" to the five modified celluloses listed in Directive 74/329/EEC.

This evaluation relates to present food additive uses only, where levels of addition are commonly in the range 0.2 - 3.0 % of the foodstuff. Provided uses remain as at present and levels of addition are within the limits of those necessary for strictly technological purposes, true clinical laxative effects are unlikely to occur. However, the contribution of other dietary constituents with potential laxative effects to the overall dietary load of substances with this biological property should be kept under review.

Selected references

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modified cellulose	biochemistry	acute toxicity	irritation - sensitization	subacute toxicity	subchronic toxicity	chronic toxicity carcinogenicity	reproductive toxicity	teratogenicity	genotoxicity	human observations
Ethylcellulose	-	+	-	-	+	-	-	-	-	-
Ethylhydroxy ethylcellulose	-	+	+	-	+	-	-	-	-	+
E 461	+	+	+	+	+	+	-	+	+	+
E 463	+	+	+	-	+	-	-	+	-	-
E 464	+	+	+	+	+	+	-	-	-	+
E 465	+	-	-	+	-	+	-	-	-	-
E 466	+/*	+	+	+	+	+	-	+	+	+

* caecal microflora investigated as well

ADDENDUM TO OPINION ON MODIFIED CELLULOSES

OPINION ON ENZYMATICALLY HYDROLYSED CARBOXYMETHYLCELLULOSE

EXPRESSED ON 11 DECEMBER 1992

Subsequent to the request to re-evaluate the five modified celluloses permitted by Council directive 74/329/EEC, the Committee was asked to evaluate the safety in use of an enzymatically hydrolysed form of carboxymethylcellulose. The enzyme concerned is a cellulase derived from *Trichoderma longibrachiatum (T. reesei)* and its use results in a significant reduction of the average molecular weight of the carboxymethylcellulose and hence in changes in its technological properties. The Committee was provided with a 90-day feeding study on the material carried out in rats and a radiolabel metabolic balance study comparing hydrolysed carboxymethylcellulose with conventional carboxymethylcellulose, also in rats.

The Committee concluded that the enzymatically modified carboxymethylcellulose in question is acceptable and included it in the group ADI "not specified" previously allocated to the five currently permitted modified celluloses. The group ADI is subject to the limitation of the celluloses concerned to the levels of addition strictly necessary for technological purposes and is subject to the need to keep under review the overall dietary load of substances with a potential for laxation.