Cellulose fibre

Botanical Source	
Synonyms	CELLULOSE POWDER
IUPAC Name	
CAS Reference	65996-61-4 9004-34-6
E Number	E460

Food Legislation

Council of Europe (CoE)	
Number	Comment
-	-

US Food and Drug Administration	
Number	Comment
-	-

Joint FAO/WHO Expert Committee on Food Additives (JECFA)		
Number	ADI	Comment
-	-	On the basis of the available data, the total daily intake arising from use levels necessary to achieve the desired effect does not represent a hazard to health

FEMA	
FEMA No.	Comment
	Generally recognised as safe as a flavour ingredient:GRAS List Number 3

Natural Occurrence and Use in Food
Found in all plant material; used in grated cheese, fruit preserves/jams, fruit jellies.

Estimated Intake from Food and Drink	
Daily Intake mg/kg/day	FEMA Possible Average Daily Intake mg
-	-

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Tobacco Product Related Chemical and Biological Studies for Ingredients Added in a Mixture

Smoke Chemistry		
Published Source	Level Tested %	Comment
BAT	2.50000	At maximum application level this ingredient is not associated with significant increases in levels of Hoffmann analytes in smoke.

Ames Activity		
Published Source	Level Tested %	Comment
BAT	2.50000	Within the sensitivity and specificity of the system the Ames activity of the cigarette smoke condensate was not increased by the addition of the ingredient.

Micronucleus		
Published Source	Level Tested %	Comment
BAT	2.50000	Within the sensitivity of the in vitro micronucleus assay the activity of the cigarette smoke condensate was not increased by the addition of the ingredient.

Neutral Red		
Published Source	Level Tested %	Comment
BAT	2.50000	Within the sensitivity of the test system the in vitro cytotoxicity of the cigarette smoke condensate was not increased by the addition of the ingredient.

Inhalation		
Published Source	Level Tested %	Comment
BAT	2.50000	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.

Mouse Skin Painting

Published Source	Level Tested %	Comment

References
Baker RR, Pereira da Silva JR, Smith G. The effect of tobacco ingredients on smoke chemistry. Part I: Flavourings and additives. Food Chem Toxicol. 2004; 42 Suppl:S3-37.
Baker RR, Pereira da Silva JR, Smith G. The effect of tobacco ingredients on smoke chemistry. Part II: casing ingredients. Food Chem Toxicol. 2004; 42 Suppl:S39-52.
Baker RR, Massey ED, Smith G. An overview of the effects of tobacco ingredients on smoke chemistry and toxicity. Food Chem Toxicol. 2004; 42 Suppl:S53-83.

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Tobacco Product Related Chemical and Biological Studies for Ingredients Tested Singly

References
Baker RR, Bishop LJ. The pyrolysis of non-volatile tobacco ingredients using a system that simulates cigarette combustion conditions. J. Anal. Appl. Pyrolysis 2005, 74, 145-170.

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Toxicological Data on the Unburnt Ingredient

[+ve, positive; -ve, negative; ?, equivocal; with, with metabolic activation; without, without metabolic activation]

In vivo

Species	Test conditions	Endpoint	Results	Reference
Mouse (ICR)	Three studies in which mice were given microcrystalline cellulose (Avicel RCN-15, Avicel CL-611 or Avicel PH101 Pharmaceutical) orally to provide 5 g/kg bw. Bone marrow cells examined for micronuclei.	Chromosome damage	-ve	Murli, 1992, 1994a,b

In vitro

Test system	Test conditions	Endpoint	Activation status	Results	Reference
Salmonella typhimurium strains TA98, TA100, TA1535, TA1537, TA1538	Ames test with microcrystalline cellulose (Avicel RCN-15), concentrations up to 5 mg/plate.	Mutation	With and without S9	-ve	Batt, 1992
Salmonella typhimurium strains TA98, TA100, TA1535, TA1537, TA1538	Ames test with microcrystalline cellulose (Avicel AC-815), concentrations up to 5 mg/plate.	Mutation	With and without S9	-ve	Lawlor, 1996
Salmonella typhimurium strains TA98,	Ames test with "Cellulon™", a cellulose	Mutation	With and without S9	-ve	Schmitt et al. 1991

TA100, TA1535, TA1537, TA1538	produced by a bacterial fermentation process employing a strain of *Acetobacter acetic* subsp *xylinium* which closely resembles powdered and microcrystalline cellulose. (no further details given in secondary source).				
Escherichia coli strain WP2uvrA	Microcrystalline cellulose (Avicel AC-815), concentrations up to 5 mg/plate.	Mutation	With and without S9	-ve	Lawlor, 1996
Mouse lymphoma L5178Y cells	Two studies of mutagenicity at the TK locus with microcrystalline cellulose (Avicel RCN-15 and Avicel CL-611), concentrations up to 1 mg/ml.	Mutation	With and without S9	-ve	Cifone, 1992 & 1994
Chinese hamster ovary cells	HGPRT forward mutation assay with Cellulon™ (no further details given in secondary source).	Mutation	With and without S9	-ve	Schmitt et al. 1991
Chinese hamster ovary cells	Test with Cellulon™ for chromosomal aberrations (no further details given in	Chromosome damage	With and without S9	-ve	Schmitt et al. 1991

	secondary source).				
Rat hepatocytes	Test with microcrystalline cellulose (Avicel RCN-15) for unscheduled DNA synthesis, concentrations up to 1 mg/ml.	Indirect evidence of DNA damage	Without	-ve	McKeon, 1992
Rat hepatocytes	Test with Cellulon™ for unscheduled DNA synthesis (no further details given in secondary source).	Indirect evidence of DNA damage	Not applicable	-ve	Schmitt et al. 1991

References

Batt K J (1992). Avicel RCN-15 - *Salmonella/*mammalian microsome plate incorporation assay (Ames test). Unpublished report No. I91-1214 from FMC Corporation Toxicology Laboratory, Princeton, New Jersey, USA (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

Cifone M A (1992). Mutagenicity test on Avicel RCN-15 in the L5178Y TK+/- mouse lymphoma forward mutation assay with an independent repeat. Unpublished report by Hazleton Washington Inc., Vienna, Virginia, USA (FMC Study No. 191-1230) (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

Cifone M A (1994). Mutagenicity test on Avicel CL-611, E329N in the L5178Y TK+/- mouse lymphoma forward mutation assay with a confirmatory assay. Unpublished report by Hazleton Washington Inc., Vienna, Virginia, USA (FMC Study No. 194-1834) (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

DECOS (2002). Dutch Expert Committee on Occupational Standards. Cellulose. Health-based reassessment of administrative occupational exposure limits. No. 2000/15OSH/031.

JECFA (1998). Safety evaluation of certain food additives and contaminants. Prepared by the forty-ninth meeting of the Joint FAO/WHO Expert Committee on Food Additives. WHO Food Additives Series 40.

Lawlor T E (1996) Mutagenicity test with Avicel AC-815 in the *Salmonella-Escherichia coli/*mammalian microsome reverse mutation assay with a confirmatory assay. Unpublished report by Corning Hazleton Inc., Vienna, Virginia, USA (FMC Study No. I95-2047) (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

McKeon M E (1992). Genotoxicity test on Avicel RCN-15 in the assay for unscheduled DNA synthesis in rat liver primary cell cultures with a confirmatory assay. Unpublished report by Hazleton Washington Inc., Kensington, Maryland, USA (FMC Study No. I91-1229) (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

Murli H (1992). Mutagenicity test on Avicel RCN-15 *in vivo* mammalian micronucleus assay. Unpublished report by Hazleton Washington Inc., Kensington, Maryland, USA (FMC Study No. I91-1228) (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

Murli H (1994a). Mutagenicity test on Avicel pH101 Pharmaceutical in an *in vivo* mouse micronucleus assay. Unpublished report by Hazleton Washington, Inc., Vienna, Virginia, USA (FMC Study No. I94-1837) (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

Murli H (1994b). Mutagenicity test on Avicel CL-611 in an *in vivo* mouse micronucleus assay. Unpublished report by Hazleton Washington, Inc., Vienna, Virginia, USA (FMC Study No. I94-1835) (Submitted to WHO by FMC Europe N.V.) (cited in JECFA, 1998).

Schmitt D F et al. (1991). Toxicological evaluation of Cellulon™ fibre: genotoxicity, pyrogenicity, acute and subchronic toxicity. Journal of the American College of Toxicology 10, 541-554 (cited in DECOS, 2002).