

Benzoin gum sumatra

Botanical Source	Styrax benzoin Dryander Styrax paralleloneurus Perkins
Synonyms	BENZOIN RESIN SUMATRA; BENZOIN SUMATRA; GUM BENZOIN SUMATRA; GUM BENJAMIN SUMATRA
IUPAC Name	GUM BENZOIN SUMATRA
CAS Reference	9000-05-9
E Number	

Food Legislation

Council of Europe (CoE)	
Number	Comment
439	Listed by the Council of Europe as acceptable for use in food.

US Food and Drug Administration	
Number	Comment
172.510	Approved by the US FDA. FDA 21 CFR 172.510

Joint FAO/WHO Expert Committee on Food Additives (JECFA)		
Number	ADI	Comment
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FEMA	
FEMA No.	Comment
2133	Generally recognised as safe as a flavour ingredient:GRAS List Number 3

Natural Occurrence and Use in Food
Used in baked goods, gelatin and puddings, chewing gum.

Estimated Intake from Food and Drink	
Daily Intake mg/kg/day	FEMA Possible Average Daily Intake mg
0.00051	22.63

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

Smoke Chemistry		
Published Source	Level Tested %	Comment
Philip Morris	0.04600	An overall assessment of the data suggests that this ingredient did not add to the toxicity of smoke.

Ames Activity		
Published Source	Level Tested %	Comment
Philip Morris	.04600	Within the sensitivity and specificity of the system the Ames activity of the cigarette smoke was not increased by the addition of the ingredient.

Micronucleus		
Published Source	Level Tested %	Comment

Neutral Red		
Published Source	Level Tested %	Comment
Philip Morris	0.04600	Within the sensitivity of the test system the in vitro cytotoxicity of the cigarette smoke was not increased by the addition of the ingredient.

Inhalation		
Published Source	Level Tested %	Comment
Lorillard	0.00020	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.
Philip Morris	0.04600	The data indicate that the addition of the ingredient, when added with one of three groups, did not increase the inhalation toxicity of the smoke.

Mouse Skin Painting		
Published Source	Level Tested %	Comment
Lorillard	0.00020	None of the changes appeared to be substantial enough to conclude that the tumour

		promotion capacity of the condensate was discernibly different between condensate produced from cigarettes with the ingredient in comparison with condensate from cigarettes without the ingredient.
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References
Carmines EL. Evaluation of the potential effects of ingredients added to cigarettes. Part 1: cigarette design, testing approach, and review of results. Food Chem Toxicol. 2002; 40(1): 77-91.
Rustemeier K, Stabbert R, Haussmann HJ, Roemer E, Carmines EL. Evaluation of the potential effects of ingredients added to cigarettes. Part 2: chemical composition of mainstream smoke. Food Chem Toxicol. 2002; 40(1): 93-104.
Roemer E, Tewes FJ, Meisgen TJ, Veltel DJ, Carmines EL. Evaluation of the potential effects of ingredients added to cigarettes. Part 3: in vitro genotoxicity and cytotoxicity. Food Chem Toxicol. 2002; 40(1): 105-111.
Vanscheeuwijck PM, Teredesai A, Terpstra PM, Verbeeck J, Kuhl P, Gerstenberg B, Gebel S, Carmines EL. Evaluation of the potential effects of ingredients added to cigarettes. Part 4: subchronic inhalation toxicity. Food Chem Toxicol. 2002; 40(1): 113-131.
Gaworski CL, Dozier MM, Heck JD, Gerhart JM, Rajendran N, David RM, Brennecke LH, Morrissey R. Toxicologic evaluation of flavor ingredients added to cigarette tobacco: 13 week inhalation exposures in rats. Inhal. Toxicol. 1998; 10:357-381
Gaworski CL, Heck JD, Bennett MB, Wenk ML. Toxicologic evaluation of flavor ingredients added to cigarette tobacco: skin painting bioassay of cigarette smoke condensate in SENCAR mice. Toxicology. 1999; 139(1-2):1-17.

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Toxicological Data on the Unburnt Ingredient

Benzoin gum given by repeated covered dermal applications for 10 days did not produce sensitization reactions when tested on 25 volunteers using the maximization test (Kligman, 1970).

A number of studies, however, report that benzoin gum has induced reactions in individuals reacting to products containing the gum (Bibra, 1989; further details can be supplied, if required) and to show cross sensitization in individuals sensitive to other balsams, particularly balsam of Peru, storax, and flavouring components eugenol, vanillin, pinene, benzyl alcohol and benzyl cinnamate (Epstein, 1966; Fisher, 1986; Hjorth, 1961).

References

Bibra (1989). Gum Benzoin Toxicity Profile. Bibra – Toxicology Advice & Consulting Ltd, Sutton, Surrey, UK.

Epstein E (1966). Allergy to dermatologic agents. Journal of the American Medical Association, 198, 517 (cited in Bibra, 1989).

Fischer A A (1986). Adhesives, gums and resins. In: Contact Dermatitis. 3rd edition. Lea and Febiger, Philadelphia. Pp 644-674.

Hjorth N (1961). Balsam of Tolu, styrax and benzoin. Acta Dermato-Venereologica Stockholm, 41 suppl.46, 61-81 (cited in Fischer, 1986).

Kligman A M (1970). Report to the Research Institute for Fragrance Materials (RIFM), 7 October (cited in Opdyke, 1973).