

Glyceryl triacetate

Botanical Source

Synonyms Triacetin;
Glycerol triacetate

IUPAC Name

CAS Reference 102-76-1

E Number E1518

Food Legislation

Council of Europe (CoE)

Number	Comment
-	-

US Food and Drug Administration

Number	Comment
182.1901	Approved by the US FDA. FDA 21 CFR 182.1901

Joint FAO/WHO Expert Committee on Food Additives (JECFA)

Number	ADI	Comment
920	ND	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
2007	Generally recognised as safe as a flavour ingredient:GRAS List Number 3

Natural Occurrence and Use in Food

Found in papaya; used in candy, baked goods, ice cream.

Estimated Intake from Food and Drink

Daily Intake mg/kg/day	FEMA Possible Average Daily Intake mg
1.6242	0.083

Glyceryl triacetate

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

Smoke Chemistry		
Published Source	Level Tested %	Comment
BAT	0.12000	At maximum application level this ingredient is not associated with significant increases in levels of Hoffmann analytes in smoke.
Philip Morris	0.00540	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
BAT	0.12000	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.
Philip Morris	0.00540	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
BAT	0.12000	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	0.12000	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.
Philip Morris	0.00540	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
BAT	0.12000	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.
Lorillard	0.00300	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.
Philip Morris	0.00540	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	0.00010	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.

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.
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.

Glyceryl triacetate

Tobacco Product Related Chemical and Biological Studies for Ingredients Tested Singly

References
Baker RR, Bishop LJ. The pyrolysis of tobacco ingredients. J. Anal. Appl. Pyrolysis 2004, 71, 223-311.

Glyceryl triacetate

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
<i>Drosophila melanogaster</i>	Adult fruit flies were “dosed at 0.2-0.3 mg”. An early, Eastern European study of unknown quality, with only very brief reporting in a review (CIR, 2003).	Mutation	-ve	Efremova, 1962

In vitro

Test system	Test conditions	Endpoint	Activation status	Results	Reference
Hamster lung (CHL/IU) cells	Up to 5 mg/ml (although the minimum effective dose - not specified - was said to produce over 50% cytotoxicity). Cells incubated for 24 hr and examined for chromosomal aberrations.	Chromosome damage	With and without S9	+ve (with S9 only) [It was noted that the induction of chromosomal damage may have resulted due to the low pH of the culture medium.]	Kusakabe et al. 2002

<i>Salmonella typhimurium</i> strains TA97, TA98, TA100 and TA1535	Ames test, using concentrations up to 10 mg/plate. A high quality study.	Mutation	With and without S9	-ve	NTP, 2004
<i>Salmonella typhimurium</i> strains TA98, TA100, TA1535, TA1537	Ames test, using concentrations up to 5 mg/plate.	Mutation	With and without S9	-ve (a good quality study)	HRC, undated
<i>Salmonella typhimurium</i> strains TA98, TA100, TA1535, TA1537	Ames test, using concentrations up to 5 mg/plate. Study performed to OECD guidelines.	Mutation	With and without S9	-ve	JETOC, 2000
<i>Salmonella typhimurium</i> strains TA98, TA100, TA1535, TA1537	Ames test, using concentrations up to 5 mg/plate.	Mutation	With and without S9	-ve	Unichema Chemie BV, 1994.
<i>Salmonella typhimurium</i> strains TA1535, TA1537 and TA1538	Ames test, using concentrations up to 0.0013% w/v. Limited study: insufficient strains	Mutation	With and without S9	-ve	LBI, 1976
<i>Salmonella typhimurium</i> , various strains	2 Ames tests (unpublished)	Mutation	With and without S9	-ve	IUCLID, 2000
<i>Salmonella typhimurium</i>	Ames test. [Apparently a very brief	Mutation	With and without S9	-ve	Wallat, 1982

	report of an unpublished study. No further details given in expert review.]				
<i>Escherichia coli</i> WP2uvrA	Up to 5 mg/plate.	Mutation	With and without S9	-ve	JETOC, 2000
<i>Saccharomyces cerevisiae</i> D4	Up to 5% w/v.	Mutation	With and without S9	-ve	LBI, 1976

References

Bibra (1997). Bibra Toxicity Profile: Triacetin. Bibra, Sutton, Surrey, UK.

CIR (2003). Cosmetic Ingredient Review. Final report on the safety assessment of triacetin. International Journal of Toxicology 22(S2), 1-10.

Efremova G I (1962). The mutagenic effect of vanillin and some of its derivatives. Dokl. Biol. Sci. 146, 1034-1036 (cited in CIR, 2003).

HRC (undated). Microbiological Section, Hindustan Research Centre, Adheri (east), Bombay 400 099, India (cited in IUCLID, 2000).

IUCLID (2000). Dataset for Triacetin. <http://ecb.jrc.it/IUCLID-DataSheets/102761.pdf>.

JETOC (2000). Information Sheet Special Issue No. 6, JETOC 43.

Kusakabe H et al. (2002). Relevance of chemical structure and cytotoxicity to the induction of chromosome aberrations based on the testing results of 98 high production volume industrial chemicals. Mutation Research 517, 187-198.

LBI (1976). Unpublished report LBI No. 2468; NTIS Report PB257871 (cited in OECD, 2002).

NTP (2004). US National Toxicology Program. Study no. A75040. http://ntp-apps.niehs.nih.gov/ntp_tox/index.cfm.

OECD (2002). SIDS initial assessment Report on Triacetin.

Unichema Chemie BV (1994). Unpublished data supplied to CTFA (Cosmetic, Toiletry and Fragrance Association) (cited in CIR, 2003).

Wallat S (1982). Unpublished data. Henkel KGaA, Report No. 292 (cited in Bibra, 1997).