

Citronellal

Botanical Source

Synonyms DIMETHYL-6-OCTENAL (3,7-);
DIMETHYLOCT-6-ENAL (3,7-);
RHODINAL

IUPAC Name

CAS Reference 106-23-0

E Number

Food Legislation

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

US Food and Drug Administration	
Number	Comment
172.515	Approved by the US FDA. FDA 21 CFR 172.515

Joint FAO/WHO Expert Committee on Food Additives (JECFA)		
Number	ADI	Comment
1220	-	No safety concern at current levels of intake when used as a flavouring agent.

FEMA	
FEMA No.	Comment
2307	Generally recognised as safe as a flavour ingredient:GRAS List Number 3

Natural Occurrence and Use in Food
Found in citrus fruits; used in beverages, baked goods, candy.

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	0.00120	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	0.00120	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	0.00120	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	0.00120	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	0.00120	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.

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 tobacco ingredients. J. Anal. Appl. Pyrolysis 2004, 71, 223-311.

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Toxicological Data on the Unburnt Ingredient

GENOTOXICITY

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

In vitro

<u>Test system</u>	<u>Test conditions</u>	<u>Endpoint</u>	<u>Activation</u>	<u>Result</u>	<u>References</u>
Chinese hamster ovary (CHO-K1) cells	Incubated for 1 cell cycle at concentrations of up to 0.1 mM, and cells in metaphase examined for sister chromatid exchanges.	Chromosome effects	Without	-ve (limited study, not tested with S9)	Sasaki <i>et al.</i> 1989
<i>Salmonella typhimurium</i> TA97a, TA98, TA100, TA102	Ames assay, tested at up to 300 ug/plate (dependent on strain). Higher doses were toxic.	Mutation	With and without S9	-ve	Gomes-Carneiro <i>et al.</i> 1998
<i>Salmonella typhimurium</i> TA98, TA100	Ames, tested at up to 0.5 mg/plate.	Mutation	With and without S9	-ve (limited study, testing in 4-5 strains is recommended)	Kasamaki <i>et al.</i> 1982

References

Gomes-Carneiro M R *et al* (1998). Mutagenicity testing of (+/-)-camphor, 1,8-cineole, citral, citronellal, (-)-menthol and terpineol with the *Salmonella*/microsome assay. Mutation Research, 416(1), 129-136 (also cited in CCRIS, 2001).

Kasamaki A *et al* (1982). Chromosomal abnormalities from flavouring agents. Mutation

Research, 105, 387-392.

Sasaki Y F *et al* (1989). Modifying effects of components of plant essence on the induction of sister-chromatid exchanges in cultured Chinese hamster ovary cells. Mutation Research, 226, 103-110.