

Methoxy benzaldehyde (para-)

Botanical Source

Synonyms ANISALDEHYDE (para-);
ANISIC ALDEHYDE;
AUBEPINE;
ALDEHYDE ANISIC;
METHOXY BENZALDEHYDE (4-);
ANISALDEHYDE

IUPAC Name

CAS Reference 123-11-5

E Number

Food Legislation

Council of Europe (CoE)	
Number	Comment
103	Listed by the Council of Europe as acceptable for use in food at up to 50 ppm.

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
878	440	No safety concern at current levels of intake when used as a flavouring agent.

FEMA	
FEMA No.	Comment
2670	Generally recognised as safe as a flavour ingredient:GRAS List Number 5

Natural Occurrence and Use in Food
Found in coffee, tea, tomato, beer, krill; used in baked goods, candy, dairy products.

Estimated Intake from Food and Drink	
Daily Intake mg/kg/day	FEMA Possible Average Daily Intake mg
0.004703	13.556

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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	0.02000	At maximum application level this ingredient is not associated with significant increases in levels of Hoffmann analytes in smoke.
Philip Morris	0.00840	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	0.02000	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	0.00840	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	0.02000	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	0.02000	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	0.00840	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	0.02000	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.
Lorillard	0.00001	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.
Philip Morris	0.00840	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	0.00001	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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Methoxy benzaldehyde (para-)

Tobacco Product Related Chemical and Biological Studies for Ingredients Tested Singly

References
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Toxicological Data on the Unburnt Ingredient

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

In vitro

Test system	Test conditions	Endpoint	Activation	Result	References
Human lymphocytes	para-Methoxybenzaldehyde tested up to a concentration of 2 mM. Cells examined for evidence of sister chromatid exchange.	Chromosome effects.	Without.	+ve	Jansson <i>et al.</i> 1988
Chinese hamster fibroblast cells	para-Methoxybenzaldehyde tested up to 0.5 mg/ml. Cells examined for chromosome aberrations.	Chromosome damage.	Without.	-ve	Ishidate <i>et al.</i> 1984
Mouse lymphoma L5178Y cells	para-Methoxybenzaldehyde tested up to a concentration of 8.03×10^{-3} mol/l (8 mM). Cells examined for evidence of DNA alkaline unwinding (strand breaks).	DNA damage.	Without.	+ve	Garberg <i>et al.</i> 1988
Mouse lymphoma L5178Y cells	Mouse lymphoma assay. para-Methoxybenzaldehyde tested up to a concentration of 5.08×10^{-3} mol/l (5 mM).	Mutation.	Without.	+ve	Wangenheim & Bolcsfoldi, 1988
Chinese hamster B241 (fibroblast) cells	The lowest “active” concentration of para-methoxybenzaldehyde was 0.007 µg/ml (highest tested concentration not provided). Tested for clastogenicity (chromosome breaks).	Chromosome damage.	Without.	+ve	Ishidate <i>et al.</i> 1988

<i>Salmonella typhimurium</i> , strains TA98, TA100, TA1535, TA1537, TA1538; <i>Escherichia coli</i> , strain WP2uvrA	Ames test. para-Methoxybenzaldehyde tested up to 2 mg/plate (toxic) without S9 and 5 mg/plate (toxic) with S9.	Mutation.	With and without S9.	-ve	JETOC, 1996
<i>Salmonella typhimurium</i> , strains TA92, TA94, TA98, TA100, TA1535, TA1537	Ames test. para-Methoxybenzaldehyde tested up to 5 mg/plate.	Mutation.	With and probably without S9.	-ve	Ishidate <i>et al.</i> 1984
<i>Salmonella typhimurium</i> , strain TA100	Ames test. para-Methoxybenzaldehyde tested up to 1 mg/plate.	Mutation.	Probably without.	-ve	Rapson <i>et al.</i> 1980
<i>Salmonella typhimurium</i> , strain TA102	Ames test. para-Methoxybenzaldehyde tested up to 5 mg/plate.	Mutation.	Evidently with and without S9.	-ve	Jung <i>et al.</i> 1992
Chinese hamster B241 cells	Methoxybenzaldehyde (unspecified) tested at 50 nM. 24-hour exposure. Cells examined for chromosome aberrations.	Chromosome damage.	With and without S9.	+ve	Kasamaki <i>et al.</i> 1982
Chinese hamster ovary cells	Methoxybenzaldehyde (unspecified) tested up to 100 µM. Cells examined for chromosome aberrations.	Chromosome damage.	Without.	? weak effect.	Sasaki <i>et al.</i> 1990

<i>Salmonella typhimurium</i> , strains TA98, TA100, TA1535, TA1537	Ames test. Methoxybenzaldehyde (unspecified) tested up to 3 μ mol/plate.	Mutation.	With and without S9.	-ve	Florin <i>et al.</i> 1980
<i>Salmonella typhimurium</i> , strains TA97, TA102	Ames test. Methoxybenzaldehyde (unspecified) tested up to 1 mg/plate.	Mutation.	With and without S9.	-ve	Fujita & Sasaki, 1987
<i>Salmonella typhimurium</i> , strains TA98, TA100	Ames test. Methoxybenzaldehyde (unspecified) tested up to 0.5 mg/plate.	Mutation.	With and without S9.	-ve	Kasamaki <i>et al.</i> 1982
<i>Bacillus subtilis</i> , strains H17/M45	REC assay. Methoxybenzaldehyde (unspecified) tested at 22 μ g/disk.	DNA damage (indicative test).	Evidently without.	-ve	Oda <i>et al.</i> 1978

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