Cellulose acetate

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, NMRI, groups of 3 males	A comet assay to determine the ability of compounds to inhibit DNA damage caused by subsequent exposure to tobacco smoke. Animals treated, by gavage, with the test chemicals, using 0.5% aqueous cellulose acetate as the vehicle. A control group received the vehicle only (equivalent to a cellulose acetate dose of 50 mg/kg bw) daily for 8 days. The animals were exposed for 10 min to either fresh air or cigarette smoke. Starting 45 min after each dose and DNA damage in the lymphocytes, liver and lung were assessed. There was no untreated control group.	DNA damage	-ve The use of cellulose acetate as a vehicle suggests it was without effect.	Villard et al. 1998
Rat, white, numbers unspecified	Bone marrow mitotic index was measured in rats given brief access to diets containing 1% of two cellulose acetate polymers. No further details were available. This early Soviet study, translated for the US Environmental Protection Agency, is irrelevant but is included as the investigators claimed (incorrectly) that a change in mitotic index was an indication of mutation.	None	Not relevant Mitotic index was not affected but this is not relevant to genotoxicity.	Shtannikov et al. 1972

Drosophila melanogaster (this assay can be classed as *in vivo* or *in vitro*)	Fed aqueous extracts of two cellulose acetate film samples (described as treated with formamide or pyridine) at 0.8, 4 or 20%. Treated males and females mated, offspring raised on untreated nutrient and cross-bred to produce a third generation which was assessed for mutations (white eye mutants and sex-linked recessive lethal (SLRL) mutations, indicated by reduced viability). The study explored the toxicity of extractable material (not further specified) rather than the cellulose acetate polymer molecule itself. A poorly described early Soviet study, translated for the US Environmental Protection Agency.	Mutation	? No effect on eye colour mutation rate. Offspring viability, a possible effect on SLRL rate, in the third generation showed a dose-related decrease. The extracted chemicals responsible were not identified.	Shtannikov et al. 1972

References

Shtannikov EV et al. (1972). Mutagenic activity of several polymers used in the demineralization of water. Gigiena i Sanitaria 37, 17-22.

Villard P-H et al. (1998). Effects of tobacco smoke on the gene expression of the Cyp1a, Cyp2b, Cyp2e, and Cyp3a subfamilies in mouse liver and lung: Relation to single strand breaks of DNA. Toxicology and Applied Pharmacology 148, 195-204.