Sodium alginate

Toxicological Data on the Unburnt Ingredient

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

In vivo

Species	Test conditions	Endpoint	Results	References
Mice, Swiss ICR/Ha, males, 7-10 per group	A dominant lethal assay where males were given a single intraperitoneal injection of alginic acid at 0, 82, 200 or 1000 mg/kg bw, and subsequently mated with untreated females (1 male to 3 females) on a weekly basis for 8 wk. One male (of nine) died at the highest dose. Early foetal deaths were monitored	Germ cell mutations and/or chromosome damage	-ve actual data were not presented for test compounds judged as negative, so no independent verification was possible	Epstein et al. 1972

In vitro

Test system	Test conditions	Endpoint	Activation status	Results	References
Chinese hamster lung fibroblast cells	Cells incubated with sodium alginate at three concentrations, up to 1 mg/ml (the highest non-toxic dose), for 24 and 48 hr, then cells were examined for chromosome aberrations and polyploidy	Chromosome damage and changes in chromosome numbers	Without	-ve limited study as no S9 was used	Ishidate et al. 1984, 1988

Chinese hamster ovary cells	Cells incubated with sodium alginate at three concentrations, up to 0.1 mg/ml. Cells were examined for chromosome aberrations	Chromosome damage	Without	-ve limited study as no S9 was used	Larripa et al. 1987
Salmonella typhimurium strains TA92, TA94, TA98, TA100, TA1535 and T1537 (and possibly TA2637)	Six sodium alginate concentrations, up to 10 mg/plate, were tested in duplicate	Mutation	With and without S9	-ve good quality study	Ishidate et al. 1984
Salmonella typhimurium strains TA97 and TA102	Ames test using a pre-incubation step. Sodium alginate was tested at six concentrations up to 10 mg/plate	Mutation	With and without S9	-ve limited test as only two strains were used	Fujita and Sasaki, 1993
Salmonella typhimurium strains TA98 and TA100	Ames test on sodium alginate. Paper is in Japanese, no experimental details in English, though most compounds were tested at a range of concentrations up to 1 or 10 mg/plate	Mutation	With and without S9	-ve limited test (only two strains used), limited data given in English	Haresaku et al. 1985
Bacillus subtilis bacteria, strains H17 (rec+) and M45 (rec-)	A rec assay measuring differential killing, indicative of	DNA damage	With and without S9	No test (reported as -ve, but toxicity	Ishizaki and Ueno, 1987

	DNA damage. Alginic acid was tested at up to 2 mg/plate, which was not toxic to either strain			must be achieved in order to make this claim)	
Salmonella typhimurium strains TA98 and TA100	Test of the ability of alginic acid to inhibit the mutagenic activity of various known mutagen (IQ)	Anti-mutagenicity	With and without S9	Alginic acid reduced the potency of several known mutagens	Yamaguchi, 1992
Salmonella typhimurium strain TA98	Test of the ability of sodium alginate to inhibit the mutagenic activity of a known mutagen (IQ)	Anti-mutagenicity	Without S9	No effect on IQ's mutagenic potency	Edenharder et al. 1995

References

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