

SODIUM-ALGINATE TOXICITY IN MICE

Sir,

Sodium alginate consisting chiefly of the sodium salt of alginic acid is widely used for its suspending, emulsifying, thickening and water binding properties (1,2.). Besides its utility at other places in pharmacological laboratories it is one of the popular emulsifiers, used to bring various substances into emulsion for experimental purposes. While conducting toxicity studies of some drugs, we were administering drug emulsion in sodium alginate in one and only sodium alginate as solvent-control in another group of mice. To our utter surprise a high rate of mortality in mice injected with sodium alginate only, was observed, indicating possibly mice susceptibility to alginate. This observation prompted us to carry out further studies, to evaluate the toxic effect of sodium-alginate in mice, if any. We repeated the experiments in a larger number of animals, taking 10 mice in one group, at a time to avoid any accidental error. The total number of animals used was 70 mice of either sex weighing between 15-25 gm, obtained from Haffkine Institute, Bombay. Sodium alginate at a dose of 250, 500 and 1000 mg/kg was injected intraperitoneally in three groups of mice. Mice were observed at intervals for any side effects or any signs of toxicity like sedation, tremors, convulsions, salivation etc. Number of dead animals was counted at the end of 24 hours and 48 hours. Post-mortem was performed on all dead mice for any macroscopic evidence of toxic effect. Liver, spleen, kidney, heart and brain were removed and histopathological studies performed. Results, summarized in Table I show that in mice injected with 1000 mg/kg, total number of deaths at the end of 24 hours was 26 and at the end of 48 hours 41, out of 50 mice. At 250 mg dose no mortality was observed as can be seen from the table. Macroscopic examination of dead animals did not reveal any evidence suggestive of apparent toxicity. In microscopic examination of liver, spleen, kidney, heart and brain, there were no changes except for few haemorrhagic spots in liver and kidney. Control, animals showed no mortality.

TABLE I

Dose of sodium alginate mg/kg by intraperitoneal injection	Number of mice injected	Mortality number of mice	
		at the end of 24 hrs.	at the end of 48 hrs.
250	10
500	10	3	3
1000	50	26	41

Since sodium alginate is one of the popular emulsifiers in Pharmacological laboratories and LD 50 studies of drugs are usually performed on mice, it can be suggested on the basis of

the findings, that for toxicity studies of drugs emulsified in sodium alginate mice is not the animal of choice. In rats, sodium alginate in same doses did not cause any mortality.

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Group	Number of animals	At the end of 24 hours	At the end of 48 hours
Control	10	10	10
100 mg	10	10	10
200 mg	10	10	10
400 mg	10	10	10
800 mg	10	10	10