for its immunosuppressive properties it may also be expected to have some anti-5-HT activity.

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Ulceration of the colon in rabbits fed sulphated amylopectin

A synthetic sulphated amylopectin (SN-263) derived from potato starch has recently been investigated clinically in the treatment of gastric and duodenal ulcers (Cayer & Ruffin, 1967; Zimmon, Miller & others, 1969; Sun & Ryan, 1970). This preparation, like some other polysaccharides (heparin, chondroitin sulphate, dextran sulphate, degraded carrageenan), is known to inhibit peptic activity and to protect against experimental gastric ulceration (Levey & Sheinfeld, 1954; Anderson & Watt, 1959; Bianchi & Cook, 1964; Barnes, Redo & others, 1967; Ellis, Lunseth & Nicoloff, 1970). Because of its high molecular weight and polyanionic behaviour in solution, it seemed reasonable to suspect that sulphated amylopectin may have a deleterious effect on the colon similar to that of degraded carrageenan in laboratory animals (Marcus & Watt, 1969).

In this communication we report the results of experiments in which rabbits were fed various concentrations of the sulphated amylopectin.

Twenty male New Zealand White rabbits of 3925 g average weight were housed in separate cages and fed a standard cube diet (S.G.1). Three experimental groups, 5 rabbits in each group, received as drinking fluid 1, 0·5 and 0·1 % respectively aqueous solutions of sulphated amylopectin.* The drinking fluids were freshly prepared daily, supplied freely in drinking bottles, and the volume consumed per animal per day was measured throughout the 2 to 4 week period of the experiment. Control animals received water freely but without the addition of sulphated amylopectin. At weekly intervals, the animals were weighed and their faeces examined for occult blood using the Haematest method. At the end of the experiment, the rabbits were killed with intravenous phenobarbitone, the colons removed, emptied of faeces, and examined for the presence of ulceration.

Animals fed sulphated amylopectin at the 1 % concentration in their drinking water received on average a daily dose of 0·37 g/kg weight over the first week; thereafter, their fluid intake fell and the average daily dose over the remaining 3 weeks was

0·11 g/kg weight. Diarrhoea developed in 2 animals after 8 days, occult or visible blood in the faeces was detected in 3 animals after 11 days, and diarrhoea associated with occult or visible blood was present in all animals after 2 weeks. The animals lost weight, the average loss at the end of the experiment being 760 g. One animal died at 26 days due to blood loss from the bowel. All 5 animals in this group showed severe ulceration of the colon.

Animals fed sulphated amylopectin at the 0·5% concentration received on average a daily dose of 0·26 g/kg weight over the first week, and 0·16 g/kg over the remaining 3 week period. One animal developed diarrhoea at 12 days and died of haemorrhage from the bowel 2 days later. Diarrhoea occurred in 2 animals after 2 weeks, and occult or visible blood was found in all except 1 animal before the end of the experiment. The average weight loss in the group was 535 g. Ulceration of the colon was found in 4 of the 5 rabbits.

Animals fed sulphated amylopectin at the 0·1% concentration received on average a daily dose of 0·07 g/kg weight throughout the 4 week period. There was no diarrhoea among any of the animals in this group. Tests for occult blood in the faeces were negative except in 2 rabbits which showed occult blood after 3 weeks. The average weight loss in the group was 60 g. Ulceration of the colon was found in 2 of the 5 rabbits.

Control animals drank on average 345 ml water per day over a 4 week period. There was no diarrhoea or occult blood in the faeces at any time; the average weight gain was 10 g. No ulceration of the colon was found in any of the 5 control animals.

The results indicate that sulphated amylopectin causes ulceration of the colon in rabbits when fed in the drinking water over a 2 to 4 week period. Ulceration is produced even with small concentrations of sulphated amylopectin, i.e. one part per thousand, in some of the animals. In this respect, the deleterious effect of sulphated amylopectin is similar to that of degraded carrageenan (Watt & Marcus, 1970).

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