Letters to the Editor

Influence of ascorbic acid on the sensitivity of guinea-pig ileum

SIR,—The response of guinea-pig ileum to spasmogenic drugs varies widely at different times of the year. Munro (1951) reported that there was also a variation of response along the length of the ileum. A possible factor involved in these variations may be the ascorbic acid content of the diet.

Guinea-pigs weighing between 300 and 500 g were maintained on a diet of Rank SG1 pellets for three weeks, one half of the animals receiving daily 50 mg of ascorbic acid per animal in the drinking water. They were then killed and segments of the ileum, cleared of mesentery, were set up in 10 ml isolated organ baths, bathed in aerated Tyrode ringer at 32°, contractions being recorded on a smoked drum with an isotonic lever system. The ileum from the ascorbic acid-supplemented group was at least ten times more sensitive to acetylcholine and to histamine than that of animals not receiving ascorbic acid. This suggests that ascorbic acid plays a role in sensitivity of the ileum to spasmogens. In the ascorbic acid-supplemented group the preparations of terminal ileum were very sensitive, the threshold dose was as low as 100 pg/ml of acetylcholine and 200 pg/ml of histamine in the bath fluid.

It is of interest that Blaber & Cuthbert (1961) used large guinea-pigs for the assay of small amounts of acetylcholine, the ileum from smaller animals being insensitive. We have noted that guinea-pigs over 700 g in weight are less susceptible to scurvy than are smaller animals. The insensitivity of the ileum of smaller guinea-pigs noted by Blaber & Cuthbert and ourselves may therefore be due to ascorbic acid deficiency. We have also observed that neutralised ascorbic acid in a concentration of 5 mg/ml in the bath fluid increased the sensitivity of the ileum to acetylcholine and histamine, even when tissues from the ascorbic acid supplemented animals were used. This may therefore be a useful method of increasing tissue sensitivity to spasmogens.

We feel that these observations may be relevant to student exercises using guinea-pig ileum. An investigation of the ascorbic acid content of the diet of guinea-pigs in the different laboratories may be relevant.

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