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STIMULATION OF INTESTINAL FRUCTOSE ABSORPTION
IN THE MOUSE BY CYTOCHALASIN E *IN VITRO*

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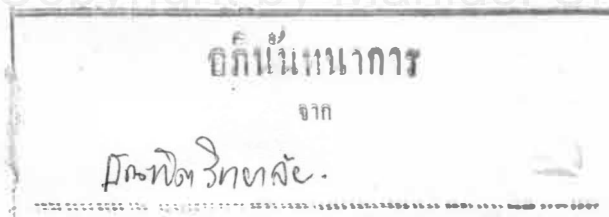
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STIMULATION OF INTESTINAL FRUCTOSE ABSORPTION IN
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ABSTRACT

The stimulatory effect of cytochalasins especially cytochalasin E on the intestinal fructose absorption in the mouse was studied *in vitro*. Cytochalasins A, B, C, D and E at a concentration of 10 µg/ml significantly stimulated the intestinal fructose absorption in the mouse by 0.61 to 4.87 folds ($P < 0.05$ and $P < 0.001$). The stimulatory potency is as follows : cytochalasin B \geq E $>$ D $>$ A $>$ C. Cytochalasin E (10 µg/ml) stimulated the intestinal fructose absorption in the following animal species such as mice, rats and guinea pigs by 3.99, 0.98 and 0.87 folds ($P < 0.001$ and $P < 0.01$) respectively. The stimulatory effect of cytochalasin E is confirmed by various experimental designs including a) simultaneous absorption with glucose, b) addition of cytochalasin E on the serosal solution, c) dose-dependent curve and time course study, and d) the fructose efflux. Further investigation for a possible stimulatory mechanism is then performed and it is likely that cytochalasin E stimulates the intestinal fructose absorption upto approximately 4 folds with no significant influence on the simple

diffusion of mannose and xylose or fructose utilization, but significantly increases both V_{max} value from 4.54 to 25.0 $\mu\text{moles/g wet wt/60 min}$ and K_m value from 1.67×10^{-2} to 2.85×10^{-2} M. It is therefore possible that cytochalasin E stimulates the intestinal fructose absorption in the mouse by interfering with the carriers on the microvillar membrane of absorptive cells.

