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The sweetness inhibitor 'Lactisole' attenuates postprandial hyperglycaemia

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Postprandial hyperglycaemia is associated with an increased risk of macrovascular disease and higher rates of CVD mortality[(1)]. Glucose absorption from the gut is facilitated by the Na-dependent glucose transporter SGLT1[(2)], and methods to reduce SGLT1-mediated glucose absorption would be an interesting therapeutic strategy. The presence of glucose in the intestine may increase the expression and activity of SGLT1, possibly via activation of the heterodimeric (T1R3/T1R2) 'sweet' taste receptors[(3)]. Lactisole is known to act on T1R3[(4)], and the aim of the present study was to investigate whether the presence of lactisole would reduce glucose uptake from the gut *in vivo*.

Six non-obese fasted healthy subjects aged 19–27 years (three males, three females) were studied on two occasions. A lactisole solution (0.25 mg/ml), or water was administered as a bolus (1 ml/kg body weight) via a nasogastric (NG) tube at time (t) 0 min. At t 15 min a bolus of 20% glucose (1 ml/kg) was given via the NG tube and a 30 min enteral infusion of 20% glucose was commenced at a rate of 4 ml/kg per h (see Figure). Arterialised-venous blood glucose concentration (BG) was monitored for 150 min. The administration of lactisole or water was randomized between the two occasions.

The mean peak BG was significantly lower ($P<0.01$) after receiving lactisole (7.70 (SD 0.63) mmol/l *v.* 8.28 (SD 0.77) mmol/l). However, no significant difference was observed in the BG profiles obtained on the two treatment occasions ($P=0.721$).

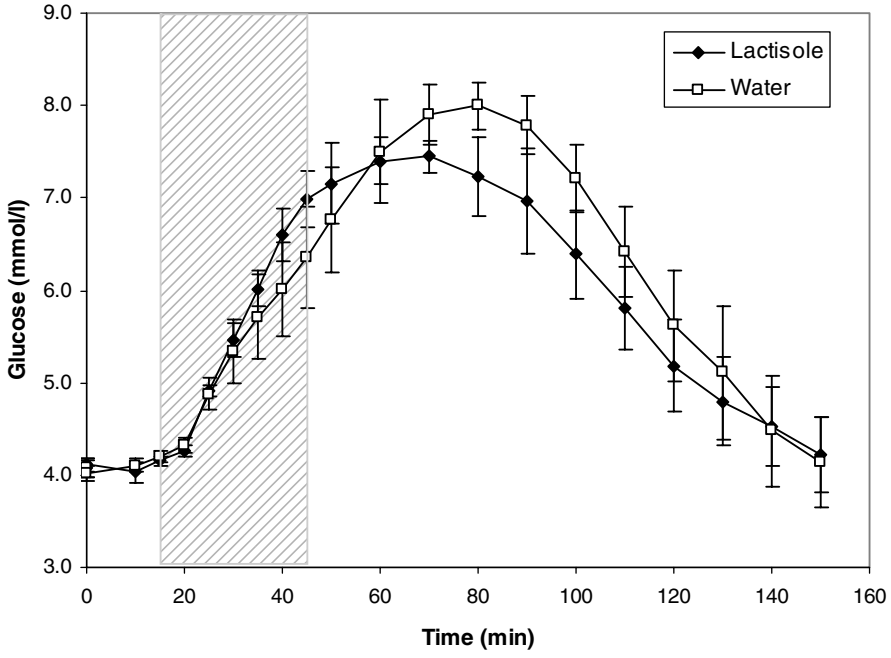

Figure. (///), 30 min enteral infusion of 20% glucose. Values are means with their standard errors represented by vertical bars.

Thus, the administration of lactisole before an enteral glucose challenge blunts postprandial hyperglycaemia.

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