Modulation of postprandial glycaemia and insulinaemia by cellulose in mixed nutrient combinations.

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Modulation of postprandial glycaemia and insulinaemia by cellulose in mixed nutrient combinations.

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Abstract

The present study was designed to examine the effect of cellulose (CL) on postprandial glycaemia and insulinaemia when ingested with glucose (G), casein (CS) and maize oil (CO) in various combinations. The study was conducted on five healthy male volunteers, on each of whom five meal tolerance tests were performed. The meals were isoenergetic and consisted of G; G and CL; G, CS and CL; G, CO and CL; G, CS, CO and CL. The meals were administered after an overnight fast. In addition to a fasting venous blood sample, blood was collected 0.5, 1.0, 1.5 and 2.0 h after ingestion for measurement of serum glucose and insulin levels. The glycaemic response to G + CS + CL and G + CS + CO + CL was significantly lower, while the insulinaemic response to G + CL was significantly higher than that to G. Addition of CL to G did not alter the glycaemic response, but accentuated the insulinaemic response. Further addition of CS in isoenergetic meals attenuated the glycaemic response, which may be because of a reduction in the amount of G in the meals. Like CS, CL also seemed to have an insulinotropic effect. The mechanism of the insulinotropic effect of CL cannot be deduced from the present study, but it is possible that like G, CL also stimulates gastric inhibitory peptide (GIP) secretion from the duodenum, which in turn stimulates insulin secretion.

Reference

Bijlani RL, Gandhi BM, Gupta MC, Manocha S, Tandon BN. Effect of whole buckwheat (*Fagopyrum esculentum*) flour supplementation in lipid profile and glucose tolerance. Indian J. Med. Res 81: 162-168,1985.