Serum glucose and insulin levels and erythritol balance after oral administration of erythritol in healthy subjects.

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Journal Information: Country of Publication: ENGLAND NLM ID: 8804070 Publication Model: Print Cited Medium: Print ISSN: 0954-3007 (Print) Linking ISSN: 09543007 NLM ISO Abbreviation: Eur J Clin Nutr Subsets: MEDLINE.MeSH Terms:Blood Glucose/*drug effects

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Administration, Oral ; Cholesterol/blood ; Electrolytes/blood ; Electrolytes/urine ; Energy Intake ; Erythritol/administration & dosage ; Erythritol/blood ; Fatty Acids, Nonesterified/blood ; Glucose/metabolism ; Glucose/pharmacology ; Humans ; Male ; Middle Aged ; Osmotic Pressure ; Radioimmunoassay ; Triglycerides/blood ; Urine/chemistry.Abstract:Objectives: To investigate the effect of an oral administration of erythritol on serum glucose and insulin levels in healthy subjects and estimate available energy of erythritol in human.

Design: Ingestion of erythritol (0.3 g/kg body weight) or the same dose of glucose as a control.

Setting: Omiya Research Lab., Nikken Chemicals Co., Japan.

Subjects: 5 healthy male volunteers aged 45-58 years.

Main Outcome Measures: Serum glucose, insulin and erythritol levels after erythritol ingestion. Urinary erythritol excretion.

Results: Erythritol did not increase serum levels of glucose or insulin, while the same dose of glucose increased rapidly glucose and insulin levels within 30 min. Erythritol did not induce any significant effects on serum levels of total cholesterol, triacylglycerol, free fatty acids, Na, K and Cl. Also, urinary Na, K and Cl were not affected by erythritol ingestion. Serum levels of erythritol reached the maximum concentration of 426.5 +/- 113.4 micrograms/ml at 30 min and declined to 13.5 +/- 3.2 micrograms/ml at 24 h. Total urinary excretion of erythritol was 85.8 +/- 4.6% for 24 h and 90.3 +/- 4.5% for 48 h, respectively.

Conclusions: Erythritol did not affect serum levels of glucose, insulin or other serum constituents. More than 90% of ingested erythritol was readily absorbed and excreted in urine without degradation. This fact suggests that available energy of erythritol in human is less than 1.7 kJ/g (0.4 kcal/g).

DESCRIPTORS: erythritol, glucose, insulin, low energy sweetener.

Substance Nomenclature:0 (Blood Glucose) 0 (Electrolytes), 0 (Fatty Acids, Nonesterified), 0 (Triglycerides), 11061-68-0 (Insulin), 149-32-6 (Erythritol), 50-99-7 (Glucose), 57-88-5 (Cholesterol)

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