



Enzyme replacement therapy for primary adult lactase deficiency. Effective reduction of lactose malabsorption and milk intolerance by direct addition of beta-galactosidase to milk at mealtime.

Rosado JL, Solomons NW, Lisker R, Bourges H.

Gastroenterology. 1984 Nov;87(5):1072-82.

The addition of microbial beta-galactosidases directly to milk at mealtime represents a potential "enzyme replacement therapy" for primary lactase deficiency. We used the hydrogen breath test as the index of incomplete carbohydrate absorption to assess the efficacy of two enzymes--one from yeast, *Kluyveromyces lactis* (LactAid), and the other from the fungus *Aspergillus niger* (Lactase N)--to assist in the hydrolysis of 18 g of lactose in 360 ml (12 oz) of whole milk when consumed by an adult lactose malabsorber. Graded amounts of Lactase N produced, at best, a 53% relative reduction in breath hydrogen excretion, whereas quantitative elimination of excess hydrogen excretion was produced by 1 and 1.5 g of LactAid. A double-blind, controlled, crossover trial was subsequently performed in 50 healthy, unselected Mexican adults, to whom 360 ml of cow's milk was presented in the three forms in a randomized order: intact milk, prehydrolyzed milk, and milk to which 1 g of LactAid was added immediately before consumption. Among the 25 subjects with incomplete carbohydrate absorption with intact milk, adding enzyme 5-min before consumption produced a 62% reduction in breath hydrogen excretion, and symptoms of intolerance were significantly reduced. The feasibility of effective enzyme replacement therapy with a beta-galactosidase from *K. lactis* is demonstrated.