

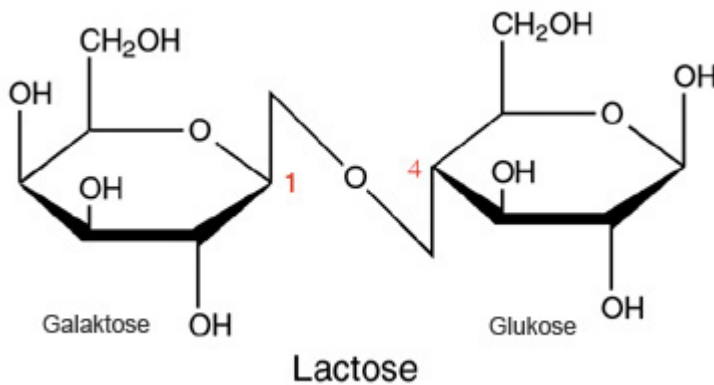
Lattosio e Lattasi (β -galattosidasi)

Lattosio

<http://www3.hhu.de/biodidaktik/zucker/sugar/laktose.html>

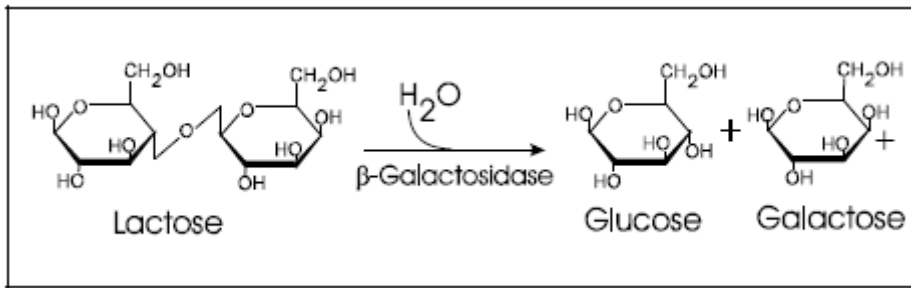
General information: **Lactose** (milk sugar) is a disaccharide that consists of \rightarrow **glucose** and \rightarrow **galactose**. Lactose is the dominant carbohydrate in **milk** and thus a good food source for babies. Milk products (curd cheese, cheese, yoghurt) contain lactose, too. **To become resorbed in the small intestine, all disaccharides must be cleaved to their basic modules, the monosaccharides.** To ensure that lactose can be cleaved, enough of the enzyme lactase has to be produced in the small intestine.

Dietetics: Big amounts of milk sugar cause diarrhea because the lactase is not working fast enough or there is not enough lactase to break down the whole amount instantly. The milk sugar then reaches the large intestine, disturbing the osmotic conditions and causing trouble (intact sugar molecules attract water and rise the fluidity of the stool). Partial breakdown of lactose by intestinal bacteria may cause flatulence, too. In Europe, the most abundant disaccharide incompatibility is a **lactose intolerance** (about 10-20% of the adults). This defect is caused by a deficiency of the enzyme lactase, which is produced by the cells lining the small intestine. The concentration of lactase is very high at the time of birth and decreases in the course of lifetime. Lactose intolerance more likely occurs in adulthood, with a higher incidence in older adults. (Please note: don't confuse lactose intolerance with cow milk allergy, which is a immune reaction to milk proteins.)

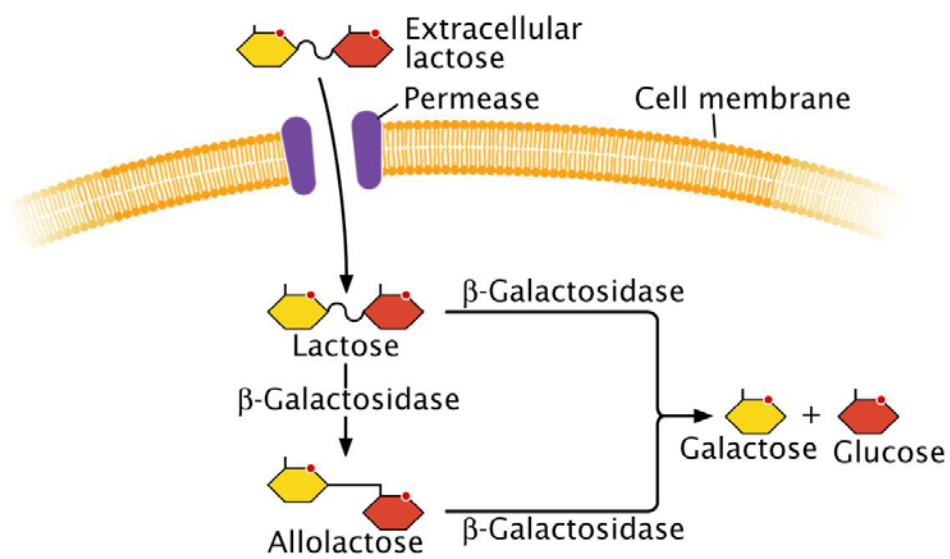


Lactose is a **water soluble disaccharide** that consists of \rightarrow glucose and \rightarrow galactose in **β -1,4-glycosidic binding**. Intestinal bacteria convert it to lactic acid, carbon dioxide, acetic acid, hydrogen, and different gases, alternatively. It has osmotic effect, thus lactose is usable as a laxative.

Beta-galactosidase



http://www.biotek.com/assets/tech_resources/96/600fig53.gif



Fig_16-07 *Genetics, Second Edition* © 2005 W.H. Freeman and Company

<http://www.cas.miamioh.edu/~wilsonkg/old/gene2005/systems/regulation/bp16p7.jpg>

UNA SORPRESA:

<http://2009.igem.org/Team:UNIPV-Pavia>

<http://2009.igem.org/Team:UNIPV-Pavia/Project/Solution>