


Lactase Enzyme Lab

Are enzymes substrate specific?
How are enzymes denatured?



Chemistry


Recall

- Enzyme + substrate
-
-

product + enzyme


Have you ever heard of someone being lactose intolerant?

- People who are lactose intolerant have trouble digesting the milk sugar lactose



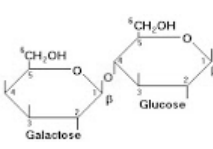
Cramps
Bloating
Diarrhea
Noise

Lactose Intolerance

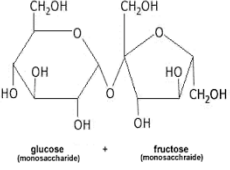


Sugars: Lactose and Sucrose

- Lactose is the sugar found in milk
- Disaccharide
- Sucrose is table sugar
- Disaccharide



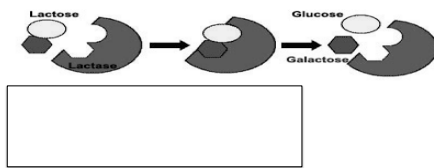
Galactose Glucose



glucose (monosaccharide) + fructose (monosaccharide)
= sucrose (disaccharide)

Lactase

- Lactase is the enzyme that speeds up the breaking of lactose into galactose and glucose (which is easily digestible)
- Found in the small intestine of humans



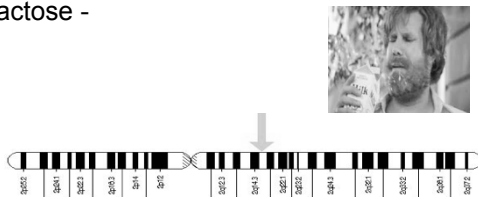
Lactose Intolerant

- Most human infants produce ample quantities of lactase for milk digestion



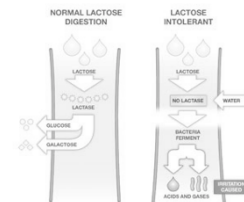
Lactose Intolerant

- In many adult humans, the gene which specifies production of lactase is turned "off" and these individuals cannot digest lactose -



Lactose Intolerant

- Lactose is a large molecule
- Causes water to enter the large intestine
- Causes watery diarrhea
- Lactose sugar is a good growth media for bacteria which can cause gas



Lets do a lab!

- Glucose Test Strips:
 - If glucose is present, the strip will change colors.
 - When will glucose be present?
 - Would fructose test positive?

Grading

- Safety (goggles and organized) 20%
- Following proper procedure 20%
- Correct Data 20%
- Questions—on your own 40%

- DUE TODAY-SUMMATIVE!