

Lactose Lab Answer Key

Follow-up Questions:

1. Why is it important to have a “control” in your experiment?

Having a control in an experiment gives more accurate test results. In this lab it is important to know the glucose content of each milk before the lactase is added in order to measure the effect of the lactase on the milk.

2. What are the independent and dependent variables in this experiment?

Independent Variable: Type of milk (The variable that changes or is manipulated)

Dependent Variable: Amount of lactase added to each milk sample. (The portion of the experiment that stays the same)

3. Which milk(s) contained glucose at the beginning of the experiment?

The Lactaid milk tested positive for glucose at the beginning of the experiment. Explain to your students that the enzyme lactase was already added to the milk when it was processed. Therefore, lactose had already been broken down into galactose and glucose.

4. Which milks contained glucose at the end of the experiment?

The cow's milk, goat's milk, and Lactaid milk all had glucose at the end of the experiment. The soy milk did not because it does not contain lactose. Therefore, lactase would have no effect on soy milk.

5. Compare the test results of the cow's and goat's milk. Did one milk contain more lactose/glucose than the other?

Both cow's milk and goat's milk contain lactose. However, goat's milk has less lactose than cow's milk. Therefore, the goat's milk sample should have less glucose than the cow's milk sample.

6. In the cow's milk and goat's milk, was the lactase tablet effective in breaking the bond of the disaccharide lactose into two separate monosaccharides of glucose and galactose? How do you know?

Yes. Glucose was detected only after adding the lactase. Since glucose would only be present in milk after the lactose has broken down, you can concur that the lactase was effective.

7. In the soy milk, did lactase break the bond of the disaccharide sucrose into glucose and fructose? Why or why not?

No, Lactase will not break down sucrose. The enzyme sucrase would be required for this process.

8. Explain the results of the Lactaid milk. Did the added lactase have an effect on the milk? Explain why or why not.

The Lactaid milk tested positive for glucose both before and after adding lactase because Lactaid milk has already had lactase added to it. Note that students may or may not find a higher glucose content after adding the lactase in their experiment.