

Use Your Knowledge Activity - Lactose Intolerance - Chapter 4: Nutrition, metabolism, enzymes

Task:

Use your knowledge of micronutrients and enzymes to debate the pros and cons of treatments for a person with lactose intolerance

Team up with up to three of your classmates sitting nearby to debate the potential pros and cons (costs and benefits) of two ways a person with lactose intolerance could potentially choose to manage her diet.

Write the arguments for and against each treatment in the table below.

Background information:

Lactose intolerance: People with lactose intolerance lack the enzyme ***lactase***, so they can't break down the lactose (sugars) in dairy products. This can cause uncomfortable symptoms such as digestive upset, bloating, gas, and vomiting when the person consumes dairy products.

Treatment: Lactose intolerance can be managed in several ways. One way is to ***take supplemental enzymes*** (lactase) when the person knows she will be eating dairy products. These supplemental enzymes help break down the lactose and reduce uncomfortable side effects. Another way is for the person to alter her diet to ***reduce consumption of dairy products***. Both treatments have benefits and costs.

Treatment	PROs (benefits)	CONs (costs)
Take supplemental enzymes		
Avoid dairy products		

Which treatment would you choose? _____

Why? _____

Instructor notes: This exercise addresses Driving Questions #2 and #3. Students should form groups of 2–4 students sitting nearby and brainstorm to come up with several pros and cons for each of the two treatment options. Before starting, the instructor should provide a quick overview of lactose intolerance (basic details given in handout). The instructor should stress that students should specifically focus on pros and cons involving micronutrients and enzymes, but that pros and cons can also involve other aspects. Students should write the pros and cons in the table. Students should be given about 5 minutes to complete this task. Following brainstorming, the instructor could (1) collect the worksheets, then summarize or (2) summarize, then choose whether to collect the completed worksheets or let students keep them to supplement their notes. The instructor should ask students to contribute their pros and cons (these could be added to a table on the board or on a slide to summarize). Finally, the class should be polled to determine the proportion that would choose each treatment, and students could be asked to contribute their reasons.

Total time budget = 12 min

- 2 min instructor introduction and overview
- 5 min student brainstorming
- 5 min class discussion

RUBRIC: 10 points total.

- 2 points for each of the four boxes in the table (could be broken down to 1 point for any reason, 2 points for multiple reasons)
- 1 point each for the opinion question and logical reasoning at the end of the activity.

Treatment	PROs (benefits)	CONs (costs)
Take supplemental enzymes	<ul style="list-style-type: none">• Allows digestion of lactase while reducing digestion problems• Allows consumption of dairy products, which are rich in calcium, without uncomfortable side effects• Allows person to eat common and widespread foods that many people enjoy (ice cream!)	<ul style="list-style-type: none">• Buying the supplements can get expensive.• The person needs to remember to take the supplements or she can't digest lactase (side effects are uncomfortable).
Avoid dairy products	<ul style="list-style-type: none">• Person would not have to deal with uncomfortable side effects of impaired lactase digestion• Person would not have to spend money on or remember to take supplements	<ul style="list-style-type: none">• Person could suffer from reduced calcium intake if diet does not compensate for lack of dairy.• Person would need to avoid foods that are common and widely consumed.

Which treatment would you choose? opinion question, either treatment accepted

Why? reasons can be widely varied but logical reasoning needed for full points