



unbottled.

Stacking Up Milk & Milk Substitutes

USE THIS DOCUMENT TO ACCESS A VIDEO GUIDED WORKSHEET TO TEACH YOUR STUDENTS ONLINE, OR IN THE CLASSROOM.

Grade Level

9th – 12th grade

Estimated Time

45 minutes

Objectives

- Compare and contrast the production of milk and plant-based milk substitutes.
- Identify the nutritional differences between these products.
- Examine the impact of marketing claims on labels and consumer perceptions of food.

Materials and Links

- Student led worksheet
 - [Microsoft Word](#) (You must download for the formatting to be correct.)
 - [PDF](#)
- [Online Video Lesson](#)
- [NPR Broadcast](#)
- [Stacking Up Milk Comparison Notes](#) (if reviewing this lesson in-class you can print off these notes instead of using the table below)
- [Stacking Up Milk Information Cards](#)

Vocabulary

Food and Drug Administration (FDA): a federal agency in the United States responsible for protecting the public health by ensuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, and the safety of our nation's food supply.

fortify: to increase the nutritive value of food, usually with vitamins or minerals



lactase: an enzyme that breaks down the lactose by breaking the bond between the glucose and galactose molecules

lactase persistence: the ability to continue to produce lactase into adulthood

lactose: a disaccharide, or sugar, composed of glucose and galactose

milk: an opaque white fluid rich in fat and protein, secreted by female mammals for the nourishment of their young

United States Department of Agriculture (USDA): a federal agency responsible for developing and executing federal laws related to farming, forestry, and food

How to use the Online Lesson

1. Make sure to post the student worksheet which includes the link to the video, as well as the questions students will answer while watching the video.
2. Students will view the video lesson and take breaks as prompted to answer the questions below.
3. Use the key to check the student worksheet (answers highlighted in yellow).

Student Worksheet with Answer Key

- 1) Begin the online video lesson (0:00 – 2:35) linked [HERE](#). You will be introduced to the lesson and instructed on how the lesson is formatted.
- 2) Once instructed pause the video and fill out the table below by using the [Stacking Up Milk Information Cards](#).

	What is it?	How is it made?	What are the ingredients?	What nutrients does it provide?
Milk	An opaque white fluid rich in fat and protein, secreted by female mammals for the nourishment of their young	Cows are milked daily on the farm, milk is transported to the processing plant where it is pasteurized, homogenized, and	Lowfat milk, vitamin A palmitate, vitamin D3	Calcium, phosphorus, vitamin A, B12, D, riboflavin, potassium, and niacin



unbottled.

		packaged to be sold at a store.		
Soy	Beverage made from soybeans.	Soybeans are soaked, ground up, the mixture is heated and homogenized and water and flavorings are added as desired before being packaged to sell	Soymilk (filtered water and soybeans), cane sugar, sea salt, carrageenan, natural flavor, tricalcium phosphate, calcium carbonate, vitamin A, vitamin, vitamin D, riboflavin, vitamin B12	Vitamin B12, phosphorus, riboflavin, vitamin D, calcium
Almond	Beverage made from almonds	Crush whole almonds, mix in aqueous solution, heat mixture, put through centrifuge to remove large particles, pasteurize, homogenize, add nutrients to fortify, cool and package	Almond milk (filtered water and almonds), evaporated cane juice, calcium carbonate, sea salt, potassium citrate, carrageenan, sunflower lecithin, vitamin A, vitamin D	Vitamin B12, riboflavin, vitamin D, calcium



Coconut	Beverage made from grated and squeezed coconut meat and usually diluted with water	De-husk the coconut, drain coconut water, grind the coconut meat, filter and centrifuge, pasteurize, add emulsifiers and nutrient fortification, cool, package, and send to the store	Coconut milk (water, coconut cream), dried cane syrup, calcium phosphate, magnesium phosphate, carrageenan, guar gum, vitamin A, vitamin D, L-selenomethionine, zinc oxide, folic acid, vitamin B12	Vitamin B12, riboflavin, vitamin D, calcium, vitamin A
Rice	Beverage most commonly made with brown rice or rice flour	Hydrate the rice, filter, add emulsifiers, homogenize, pasteurize, homogenize, add flavors and nutrient fortification, package, and send to a store	Filtered water, brown rice, expeller pressed high oleic safflower or sunflower oil or canola oil, tricalcium phosphate, sea salt, vitamin A, vitamin D, vitamin B12	Vitamin B12, Vitamin D, Calcium

- 3) Once you complete the table resume the video (2:35 – 11:42).
- 4) Pause the video when instructed and listen to the [NPR Broadcast](#). After listening to the broadcast, fill out the questions below.



unbottled.

NPR Broadcast Questions: Soy, Almond, Coconut: If it's Not From a Cow, Can You Legally Call it Milk?

What are your initial thoughts on the NPR broadcast debate?

Please note that student answers will vary in this section since the questions are based on their thoughts and perceptions.

What if the package label were to say soy beverage, almond juice, or rice water? Would you view the drink differently? Would you perceive its healthfulness differently?

Consumer trends show increased sales of plant-based milk substitutes between 2009 and 2015. Could the labeling and associated consumer perceptions impact this trend? What other factors may impact this trend?

-
- 5) Once you have completed all the questions finish watching the video (11:42 – 14:13).
 - 6) Turn your worksheet in to your teacher.

Great job learning more about dairy and the milk label today!