

Avocados

1. **Some fats are considered good fats. What are they? What function do they play in the body? What food sources provide them?**

Primary-level response:

Monounsaturated and polyunsaturated fats are considered good or “healthy fats.” These fats help to lower “bad” cholesterol and help to raise “good” cholesterol. These types of fats can be found in olive oil, nuts, and fish.

Secondary-level response:

Monounsaturated and polyunsaturated fats are considered good or “healthy fats.” These fats help to lower “bad” cholesterol and help to raise “good” cholesterol, which can help reduce the risk of heart disease. Monounsaturated and polyunsaturated fats are mostly liquid at room temperature. Omega-3 fatty acids are a type of polyunsaturated fat, which are found in cold-water fish (e.g., salmon, herring, rainbow trout, and cod). These fatty acids may also reduce the risk of heart disease.

2. **Essential fatty acids are fats the body needs. Avocados provide sources of omega-3 and omega-6 fatty acids. Why are omega-3 and omega-6 fatty acids essential to our bodies? What are some of the health benefits they provide? Make a list of healthy foods that contain these essential fatty acids and identify which of these foods you eat daily and weekly.**

Primary-level response:

Our bodies cannot make these fatty acids so we must get them from the foods we eat. We have essential fatty acids in healthy cells in our body. We need these types of fat to grow.

Healthy Foods	Good Sources of Omega-6	Good Sources of Omega-3	Eaten Regularly?	
			YES	NO
Salmon		✓		
Trout		✓		
Sardines		✓		
Flaxseed (ground, oil)		✓		

Eggs (fortified)		✓		
Wheat germ	✓			
Roasted soybeans	✓			
Walnuts	✓	✓		
Avocado	✓			
Canola oil		✓		
Pumpkin seeds		✓		
Tofu	✓	✓		

Secondary-level response:

Omega-3 and omega-6 fatty acids are considered “essential” to the diet because the human body cannot make them on its own. These fats are helpful in preventing coronary artery disease and hypertension. Increasing consumption of omega-3 and omega-6 fatty acids (or fats) has been shown to increase HDL (“good”) cholesterol levels and decrease LDL (“bad”) cholesterol levels. Eating more omega-3 fats can reduce the body’s inflammatory responses, beneficial to maintaining a healthy immune system. Omega-3 and omega-6 fats also help maintain cell membranes and healthy skin.

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Eggs (fortified)		✓		
Wheat germ	✓			
Roasted soybeans	✓			
Walnuts	✓	✓		
Avocado	✓			
Canola oil		✓		
Pumpkin seeds		✓		
Tofu	✓	✓		

Source: Mahan, K.L., & S. Escott-Stump, *Krause’s Food, Nutrition, & Diet Therapy*, 11th ed., Elsevier, USA, 2004.

- 3. All fruits are classified into two broad categories: dry and fleshy. The two main classes of fleshy fruits are drupes and berries. What kind of fruit is the avocado and why? Why is the avocado more commonly known as a vegetable?**

Primary-level response:

- The avocado is a single-seeded, fleshy berry.
- Fruits are the matured ovary of a flower, consisting of the pericarp (ovary wall) which encloses one or more seeds.
- The pericarp has three layers of tissue:
 - Exocarp (outer layer, often called the skin or rind)
 - Mesocarp (middle layer, makes up most of the pericarp)
 - Endocarp (inner layer; either tough and hard or soft and fleshy)
- Drupes have a fleshy mesocarp but a tough-leather or bony endocarp; these fruits are often said to have “stones” or “pits” rather than seeds (e.g., peaches).
- The avocado has a fleshy mesocarp and endocarp. The endocarp is thin, often hard to differentiate from the mesocarp and may adhere to the outer seed coat.
- Many people think avocados are green vegetables. Avocados are commonly consumed with other vegetables (e.g., salads) so people consider them a vegetable. Its taste is also not “sweet” like many fruits.

Secondary-level response:

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- Drupes have a fleshy mesocarp but a tough-leather or bony endocarp; these fruits are often said to have “stones” or “pits” rather than seeds (e.g., peaches).
- Berries have a fleshy mesocarp and endocarp, and may have more than one seed.
- The avocado has a fleshy mesocarp and endocarp. The endocarp is thin, often hard to differentiate from the mesocarp and may adhere to the outer seed coat.
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- 4. Avocados do not ripen on the tree and are commonly shipped unripe to prevent damage. Research the process of how avocados are harvested and shipped to**

market. Find out how long it takes on average for avocados to ripen once picked. Develop an experiment to speed up the ripening process. Present your results using charts and timelines to California avocado growers (by e-mail or letters).

Primary/Secondary-level response:

- Avocados are picked by hand in a hard “green” state when fruit reaches mature size.
- The fruit ripens in a few days (3 to 5 days).
- Supermarkets sell pre-softened avocados by storing avocados with other fruits, like bananas, or treating with a special gas to stimulate ethylene synthesis.
- Growers can keep avocados on the tree up to 4 to 6 months after being fully developed. After this time, the fruit will usually fall to the ground and ripen.
- The majority of consumers consider an avocado ripe if it is ready to eat the day they purchase it
- *Student experiments and results will vary.*

Sources:

Mahan, K.L., & S. Escott-Stump, *Krause’s Food, Nutrition, & Diet Therapy*, 11th ed., Elsevier, USA, 2004.

www.nal.usda.gov/fnic/foodcomp/search/

<http://ucavo.ucr.edu>

www.cfaitc.org/factsheets/pdf/Avocados.pdf

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