

## Answers Nutrition for Healthy Living 120: Test Review Fats

Answer the following questions:

1. What are the three main groups of lipids?

Triglycerides, phospholipids, sterols

2. Why does the body need to obtain linoleic (omega 6) and linolenic (omega 3) fatty acids from plants, nuts, seeds and fish?

Because these are essential fatty acids and the body cannot make them.

3. What does hydrogenation do to fats?

Hydrogenation makes foods last longer, but also forms trans fats. Hydrogenation breaks the double bonds and adds more hydrogen making them more saturated.

4. What are triglycerides?

Triglycerides are the major type of fat found in foods and in the body. They consist of three fatty acids attached to a glycerol molecule.

5. What is the difference between saturated and unsaturated fatty acids? Monounsaturated and polyunsaturated?

The difference between saturated and unsaturated fatty acids is that saturated fatty acids have no double bonds in their structure, whereas unsaturated fatty acids have at least one double bond. Monounsaturated and polyunsaturated are both unsaturated fatty acids monounsaturated fatty acids have one double bond and polyunsaturated have two or more double bonds.

6. How are trans-fats created? How do they influence heart disease?

Transfats are created through the process of hydrogenation by breaking the double bonds and adding hydrogen making them more saturated. They influence heart disease because they increase LDL ("bad") cholesterol and decrease HDL "good" cholesterol

7. What foods can lecithin be found in?

Eggs yolks, chocolate candy, legumes, vegetables.

8. Why is cholesterol not essential to the diet?

Cholesterol is not essential to the diet because the body manufactures it.

9. List and explain the 6 functions of lipids.

1. Provide essential fatty acids that our body cannot make.
2. It's a concentrated source of energy providing 9cal/g of energy.
3. Insulates the body: we store lipids in adipose tissue under our skin
4. Cushions Vital organs: body fat surrounds organs like the heart and liver and protects them from bumps and bruises of body movement
5. Dissolves and Carries Vitamins
6. Is an essential part of the cell structure: Lipids make up the cell membrane of every cell in our body.

10. What role does cholesterol play in the body?

Our body uses cholesterol to make sex hormones.

11. Describe briefly how lipids are digested and transported throughout the body.

Fats in foods are chewed and swallowed and in the stomach are separated from the watery contents. Once they reach the small intestine they are mixed with bile that breaks the fat into tiny droplets. Enzymes from the pancreas break the triglycerides down into their separate structures and then the fat gets absorbed into the cells lining the intestine.

12. What is a chylomicron and how does it help with digestion of lipids?

A chylomicron forms when balls of triglycerides are coated with cholesterol, phospholipids and proteins. It helps with the digestion of lipids because it carries absorbed dietary fat to the body cells because fats are not soluble in water and blood is made mostly of water without this coating the fats would not move through the blood vessels to the tissues where they are needed.

13. What are lipoproteins? Describe briefly the three types of lipoproteins.

Lipoproteins are a combination of fats and proteins that help transport fats in the body. The Three types of lipoproteins are:

1. VLDL (very low density lipoproteins), which carry triglycerides and cholesterol made by the liver to body cells.
2. LDL (low density lipoproteins) carry cholesterol through the bloodstream to body cells
3. HDL (high density lipoproteins) pick up cholesterol from around the body and transfer it to other lipoproteins to take back to the liver. The liver processes the returned cholesterol as waste and removes it from the body.

14. What percent of your calories should come from fat? How much of this should be saturated? Monounsaturated? Polyunsaturated?

25% to 35% of your calories should come from fat. No more than 7-10% should come from saturated fat. 10-15% monounsaturated fat and 10% from polyunsaturated fats.

15. Give examples of each of the following: saturated fats, monounsaturated fats, and polyunsaturated fats.

Saturated fats = butter, margarine, coconut oil

Monounsaturated fats = olive oil, sesame oil, canola oil

Polyunsaturated fats= sunflower seed oil, corn oils

16. Are all liquid fats unsaturated? Explain

No not all liquid fats are unsaturated for example vegetable oil is a liquid what that is saturated.

17. After bile has entered the small intestine and has emulsified fat, what two paths can the fat take?

Glycerol and short chain fatty acids pass through the intestinal lining directly into the bloodstream. Monoglycerides and long chain fatty acids are converted back into triglycerides and will form chylomicrons and carry absorbed dietary fat to the body cells.

Fill in the Blanks:

1. Lipids is another name for fats.
2. Fat molecules are composed of the three elements: carbon , hydrogen , oxygen .
3. Triglycerides make up 95% of the fat we eat. It is made up of one molecule of glycerol and three fatty acids.
4. Fats are broken down in the digestive system, into glycerol and fatty acids.
5. Most fat digestion occurs in the small intestine.
6. Bile is the enzyme responsible for fat digestion.
7. Fat provides 9 kcal/g of energy to the body.
8. lecithin act as emulsifiers in foods.
9. Cholesterol is a well-known and discussed sterol.
10. Excess fat in the body is stored in adipose tissue.
11. Fat is important in transporting fat –soluble vitamins in the bloodstream.
12. Omega 3 fatty acids are known as essential fatty acids. They cannot be produced by the body.
13. Saturated fats are usually solid at room temperature. While unsaturated fats are liquid.
14. Hydrogenation is a process that turns an oil into a solid fat.
15. You should consume no more than 30 % of your total calories from fat and of that amount, no more than 10 % should be saturated.
16. Saturated fats are found in animal products and tropical oils.
17. Bile is produced by the liver and stored in the gall bladder.
18. Lipoproteins carry lipids in the blood.
19. LDL stands for low density lipoproteins, the “bad” cholesterol.
20. HDL stands for high-density lipoproteins, the “good” cholesterol.