

Video talk



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What happens to dietary fats in the body? That is our talk, today.

Transcript:

Dietary fats are triglycerides

Triglycerides are composed of fatty acids

Each molecule of triglyceride contains three fatty acids joined to an alcohol glycerol.

Yes, fats you eat are triglycerides, and each molecule is composed of one glycerol molecule and three fatty acids.

'Triglycerides are the main stores of body fat. They are stored in adipose cells, widely distributed over the body—mainly under the skin, around deep blood vessels, and in the abdominal cavity and to a lesser degree in association with muscles.'

So, when you see a guy fat as ever, you know where most of the fats are stored to give that shape: under the skin called subcutaneous fat and the protruding belly due to visceral fat.

There are three kinds of macronutrients in the diet- we eat, Carbs, Fats and Proteins.

Today, our discussion is on fats and what happens to them in our body.

Most of the dietary fats we eat are natural oils- both polyunsaturated, monounsaturated, and animal saturated fats- are all packaged as triglycerides in the foods. Fish also has healthy fats in oil form called omega-3 fatty acids. So, they are called oily fish. They are low calorie sea foods.

These fatty acid carbon chains are further classified as long chain, medium chained referred to as MCT, and short chain fatty acids.

Long-chain fatty acids (LCFA) have 13-22 carbons in the longest chain. They are found in most fats and oils, including olive oil, soybean oil, fish, nuts, avocado and meat.

Saturated long-chain fats include myristic acid, palmitic acid, stearic acid and arachidic acid.

These are fatty acids found in dairy fat, coconut oil, palm kernel oil, peanut oil, and other vegetable oils.

To reduce your risk of heart disease and stroke, the National Heart Foundation recommends 250-500mg per day of long-chain omega-3 fatty acids.

You may be taking them daily in capsule form.

So, when we eat dietary fat, we are really eating triglycerides.

Do vegetables we eat have fats?

Plant fats, such as nuts, seeds, avocados, olives, and oils made from plants like sunflowers, olives, soybean, and safflower, tend to have a higher proportion of monounsaturated fatty acids (MUFAs) and polyunsaturated fatty acids (PUFAs), except for coconut, palm kernel, and palm oils.

Leafy veggies contain no fat.

So, we are clear what dietary foods we consume day to day has fats in fatty acid form, including the veggies we eat.

They are all found as triglycerides.

Triglycerides are lipid compounds composed of an alcohol glycerol attached to 3 fatty acid chains of varying length and composition.

So, in a triglyceride molecule you could have saturated or unsaturated fatty acids.

Saturated fats seem to cling onto surfaces, whether onto your plate you are about to wash after enjoying a fatty meal, or internally into the blood vessels and fatty tissue.

You know how extra soap suds are needed to remove the oily fats on your plates after eating a fatty meal.

Fats are sticky. No wonder they cling and settle down on smooth surfaces like the blood vessels to form plaques.

Process of digestion and absorption of triglycerides

These dietary triglycerides are broken down into smaller chain fatty acids in the gut, by pancreatic lipases after being emulsified by the bile salts in the bile.

In the gut inner lining cells, the- glycerol and three fatty acids gets re- packed together to form a ball called a chylomicron, whose role will be to transport the triglycerides to the liver. So, the triglycerides are broken down into glycerol a fatty acid in the gut for digestion and absorption.

Then, they are formed back into triglycerides in the gut mucosa. These fatty triglycerides are not water soluble to be carried in our blood stream to its destinations.

So, the core of triglyceride gets surrounded by a monolayer of a phospholipid, cholesterol, and apoproteins, to make it water soluble to travel in your blood stream, and we now label them as chylomicrons.

What a wonderful system.

Again, there is subgrouping of these triglycerides that are coated with a water-soluble capsule according to the length of the fatty chains.

The long chain triglycerides chylomicrons take a different route through the lacteal system, and the short and medium chain triglyceride chylomicrons are directly taken into the portal system and enters the liver for further metabolism and energy production.

The system can be compared to a group of tourists being divided into two groups and taken in different directions for sightseeing.

The long chain fatty acids are taken through the lacteals in the gut to the thoracic duct which carries these fatty acids in chylomicrons and delivers to the left subclavian vein.

Through the subclavian vein these long chain fatty acids enter the right chambers of the heart, then via the lung vessels, after the blood being oxygenated, pumped through the heart to be fed into the body tissues and the excess is stored in the adipose cells.

As mentioned, the short and medium chain fatty acids are directly taken into the liver through the portal veins.

Others are animal derived foods such as lard, bacon, dairy, beef, eggs etc. have long chain fatty acids.

Short chain and medium chain triglycerides do not form chylomicrons, but directly transported to the liver through the portal vein without packaging into lipoprotein particles in the chylomicron balls.

So, the coconut oil you consume in your curries has medium chain fatty acids referred to as MCTs, and as such directly enters the liver through the portal veins. In the liver it is totally metabolized making it readily available as an energy source.

Coconut oil is "one of the worst foods you can eat" and is "pure poison", a Harvard professor has said. ... In a speech at the prestigious American university, Dr Karin Michels warned against consuming it.

If this professor's findings are true, the livers of Asians and others who use coconut in their daily staple diets should have severe liver damage.

Today, in the US coconut diets are promoted in slimming diets and most popular.

Let us talk about short chain fatty acids.

Short chain fatty acids are found in types of cheeses, butter, and cow's milk.

They are also secreted by the gut bacteria through fermentation of prebiotics and resistant starch and they are essential for your gut, body and even brain health.

High-fiber foods, such as fruits, veggies, legumes, and whole grains, encourage the production of short-chain fatty acids through fermentation by the gut microbes.

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The short and medium chain fatty acids absorbed as triglycerides enters the liver through the portal veins, as mentioned earlier. The liver then sends these triglycerides to the muscle cells for energy or the adipose fat cell for storage.

Evidence show that eating foods rich in polyunsaturated fatty acids instead of saturated fatty acids improves blood cholesterol levels, which can decrease your risk of heart disease and diabetes type 2.

Hope this talk was useful to understand what happens to the dietary fats you eat.

Please look after your health, do not wait till you are afflicted with a chronic disease to start thinking about your body health, but practice good health daily.

Goodbye for now.

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