

Fats and Oils

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Definition:

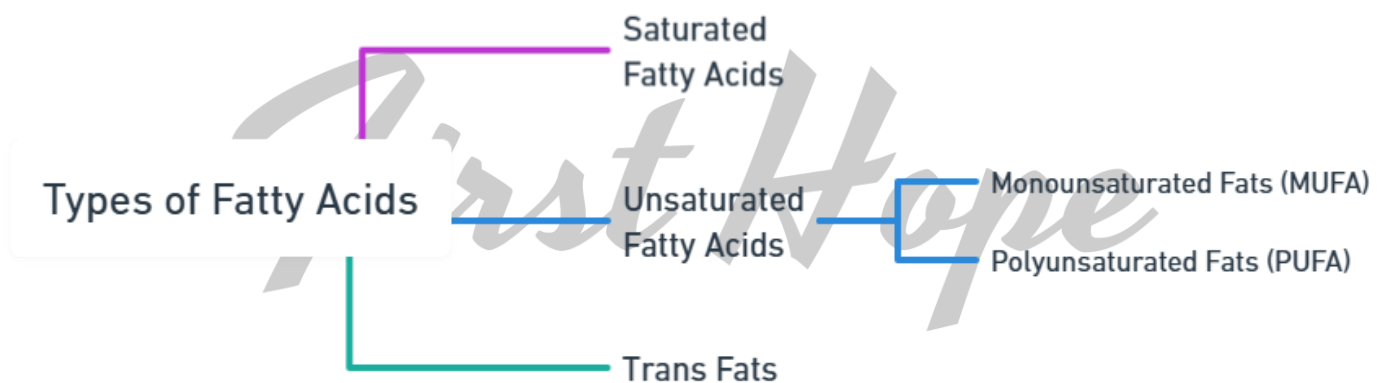
Fats:

- Fats are a type of lipid that is solid at room temperature.
- They are composed mainly of triglycerides, which are molecules made of one glycerol backbone bonded to three fatty acids.

Oils:

- Oils are also lipids but are liquid at room temperature.
- They have a similar chemical structure to fats, primarily consisting of triglycerides with unsaturated fatty acids.

Types of Fatty Acids



1. Saturated Fatty Acids:

- These fats have no double bonds between the carbon atoms in the fatty acid chain, which makes them solid at room temperature.
- Common sources include animal fats (like butter and lard) and some plant oils (like coconut and palm oil).

2. Unsaturated Fatty Acids:

- These fats have one or more double bonds in the carbon chain, which creates kinks and keeps them liquid at room temperature.
- They are further divided into:
 - Monounsaturated Fats (MUFA):** Contain one double bond. Common sources include olive oil, avocados, and nuts.
 - Polyunsaturated Fats (PUFA):** Contain more than one double bond. Examples are omega-3 and omega-6 fatty acids found in fish, flaxseeds, and walnuts.

3. Trans Fats:

- These are unsaturated fats that have been artificially hydrogenated to be solid at room temperature, which can increase the shelf life of processed foods.
- They are associated with negative health effects and are being phased out in many countries.

Functions of Fats and Oils

- **Energy Storage:** Fats are a dense source of energy, providing about 9 calories per gram. They are stored in adipose tissue and can be metabolized when energy is needed.
- **Insulation and Protection:** Fat stores in the body provide insulation against cold and protect vital organs.
- **Cell Structure:** Phospholipids, a type of fat, are essential components of cell membranes.
- **Vitamin Absorption:** Fats are necessary for the absorption of fat-soluble vitamins (A, D, E, and K).
- **Hormone Production:** Fats are involved in the synthesis of hormones, such as steroid hormones.

Health Considerations

- **Saturated Fats:** High consumption is associated with an increased risk of heart disease, but the relationship is complex and depends on the overall diet.
- **Unsaturated Fats:** Generally considered heart-healthy, particularly when they replace saturated fats in the diet.
- **Trans Fats:** Linked to an increased risk of heart disease and other health issues and are advised to be avoided.

Sources

- **Animal Sources:** Meat, dairy products, and eggs are rich in saturated fats.
- **Plant Sources:** Vegetable oils (like olive, canola, and sunflower oil), nuts, seeds, and avocados are rich in unsaturated fats.
- **Processed Foods:** Many processed foods, especially baked goods and snacks, can contain high amounts of trans fats.

Differences between fats and oils:

Property	Fats	Oils
Physical State	Solid at room temperature	Liquid at room temperature
Source	Primarily animal products and some plant	Primarily plant-based and some fish oils
	products, such as butter, lard, tallow,	
	and tropical oils like coconut and palm	



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