HME103-Principles of Nutrition

Components in foods and their relationship with health: Requirement and Metabolism of Fat

Lesson Code: HME103-Principles of Nutrition

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Fat requirement

There is no definitive idea about how much fat a person should take daily. Various societies and individuals consume varying amounts of fat, depending on their eating habits and available foods. If enough fat is consumed to meet the body's energy needs from other nutrients and to meet the essential fatty acids and transport fat-soluble vitamins, there will be no symptoms of deficiency.

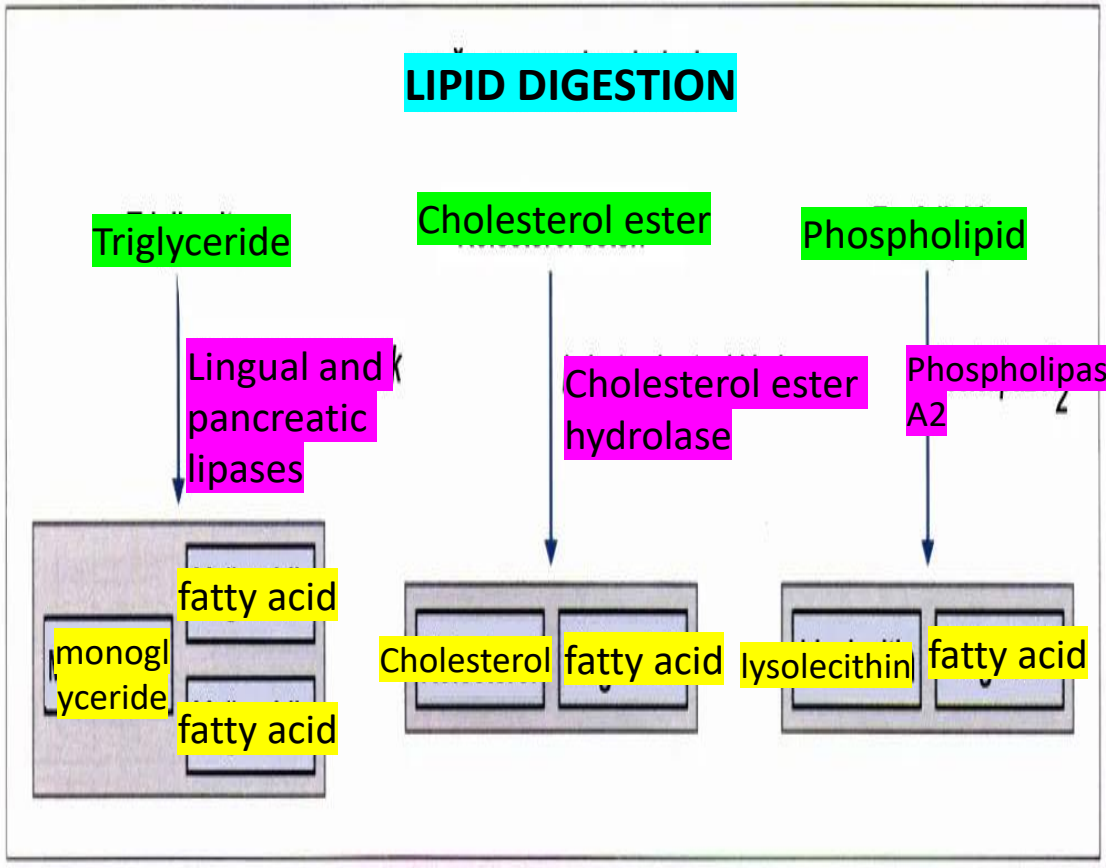
Considering that eating too much fat may lead to obesity and increased susceptibility to cancer and cardiovascular diseases, care should be taken in this regard.

It is appropriate to obtain approximately 25-30% of your daily energy intake from fat. For a person who consumes 2500 kcal per day, this means 83 grams of fat. Approximately half of this 83 grams of fat is obtained from the composition of various foods.

The daily amount of visible fat that a person should eat is around 40-43 grams, and one-third of this can be obtained from vegetable oils, one-third from olive oil and one-third from solid fats.

DIGESTION, ABSORPTION AND METABOLISM OF FAT

The entry of fat into the stomach ensures that digestion takes longer. When a certain amount of fat enters the body with a meal, it remains in the stomach before passing into the small intestines and gives a feeling of fullness. Gastric lipase is not physiologically important. Because the optimum pH of this enzyme is between 5.5 and 7.5, it does not function in the acid environment of the stomach (pH = 3). When this enzyme passes into the small intestines during digestion, it can have a lipolytic effect in an environment with a suitable pH.

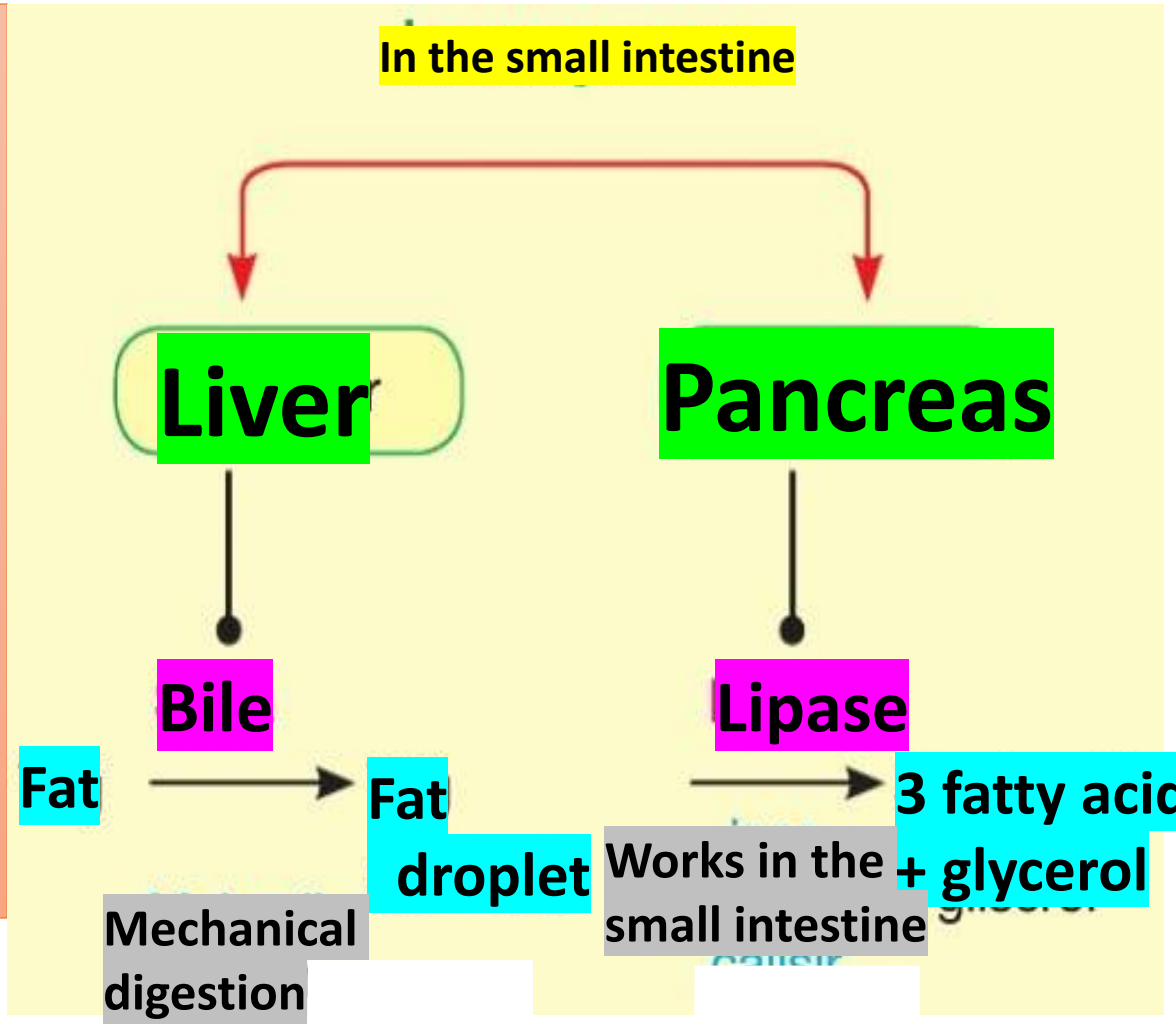


Fat digestion usually occurs in the small intestines. The majority of dietary fats are triglycerides containing long-chain fatty acids. Triglycerides consisting of short-chain fatty acids are low

DIGESTION, ABSORPTION AND METABOLISM OF FATS

In the small intestine lumen, fat can mix with bile and enter water (emulsion). Without emulsion, it is impossible to digest fat consisting of long-chain fatty acids.

Digestion is maintained with the help of pancreatic lipase (steapsin). Fat as a result of enzymatic breakdown; It is converted into mono, di and triglycerides, fatty acids and glycerol.



In the Small Intestines(in duodenum)Emulsified Oils

Pancreatic Lipase (Steapsin)

Triglyceride → Diglyceride + 1 FA

Diglyceride → Monoglyceride + 1 FA

Monoglyceride → Glycerol + 1 FA

Absorbation

- After the fat mixture is absorbed in the small intestine epithelium, fatty acid and glycerol combine again to synthesize TG (small fat droplets).
- TG forms chylomicrons by being coated with cholesterol, phospholipids and lipoproteins.
- Chylomicrons enter the bloodstream through the lymphatic vessel in the form of small particles of 0.5-1 micrometer size and are carried to the liver.