


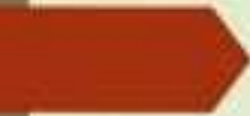

Principles of food science and nutrition

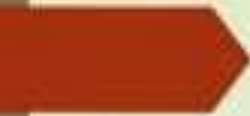
Assignment : lipids(fats)





Lipids (fats)

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- ▶ Fats – composition and chemistry, classification, functions
 - ▶ Nutritional disorders – fats deficiency
 - ▶ Energy metabolism – digestion, absorption and utilization

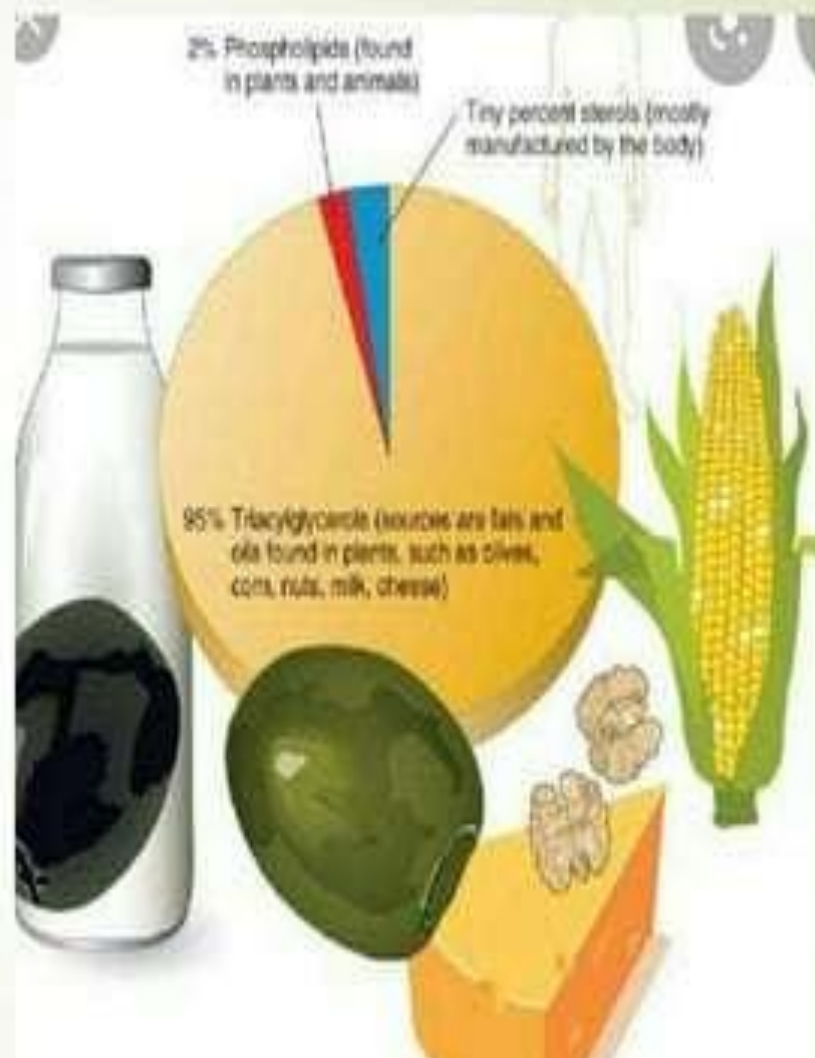


Introduction

- ▶ Lipids are a group of naturally occurring substances.
- ▶ They occur widely in plant and animal Kingdom.
- ▶ The basic structure of lipids is comprised of carbon, hydrogen and oxygen.
- ▶ Each gram of fat provides 9.0kcal of energy.

Classification:

1. Simple lipids
2. Compound lipids
3. Waxes
4. Derived lipids



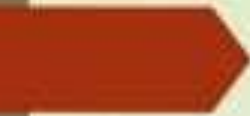
Lipids present in diet:

1. Triglycerides:


- ▶ It comprises about 95 percent of food lipids and body lipids.
- ▶ All triglycerides are similar in structure.
- ▶ When triglycerides are metabolized the glycerol is converted into glucose.

2. Phospholipids:

- ▶ They are the important structure of all membranes.
- ▶ They are similar to triglycerides, but contain two polyunsaturated fatty acid.



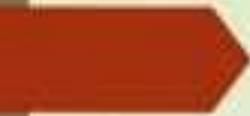
3. Sterols:

- ▶ It is the precursor of bile acids and sex hormones.
 - ▶ It is manufactured in all tissues of body, except brain.
 - ▶ Cholesterol, like lecithin is also present in foods, egg yolk, meat.
 - ▶ A transport mechanism of cholesterol called low-density lipoprotein is likely to cause risk for cardiovascular disease called atherosclerosis.
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Functions of fats:

- ▶ It is a concentrated source of energy
- ▶ Fat is essential for absorption of vitamin A,D,E,K and carotenoids.
- ▶ Vegetable fats are good sources of vitamin E.
- ▶ Fats reduce the bulk of the diet as they provide much calories.
- ▶ Fats are deposited in adipose tissue.



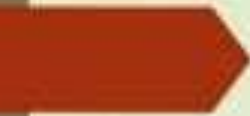
Properties of fats:

- ▶ Fats are soluble in organic solvents such as acetone, petroleum ether etc.
- ▶ Saponification value: it is defined as number of milligrams of potassium hydroxide.
- ▶ Iodine value: it is the measure of extent of unsaturated fatty acids present in fats.


Sources:



- ▶ Rich sources of EFA: safflower, sunflower, Niger seed linseed and soybean oils are rich sources of EFA.
- ▶ Good sources: rape seed, groundnut and rice bran oils.
- ▶ Fair sources: egg yolk, fat, poultry fat etc.
- ▶ Poor sources: coconut oil, palm, kernel oil, mutton etc.



Factors affecting the absorption of lipids:

- ▶ Activity of pancreatic lipase.
 - ▶ Secretion of sufficient bile.
 - ▶ The lipid synthetic activity of intestinal mucosa.
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Fatty acid deficiency in human beings:

1. Phrynoderma:

This is one of the common disorders of malnutrition observed in adults and children

Deficiency in infants:

- Hansen and co workers have reported that infants fed on EFA deficient diet developed perennial irritation in skin.



Thank you