



SNS COLLEGE OF NURSING
Saravanampatti (po), Coimbatore.

DEPARTMENT OF NURSING
COURSE NAME : BSC (NURSING) I YEAR
SUBJECT : NUTRITION
UNIT: II: FAT AND PROTEIN
TOPIC : FAT



INTRODUCTION



Fats are best known members of a chemical group called the lipids. The term lipid used by the German Biochemist Bloor in 1943





DEFINITION



The term lipid is applied to a group of naturally occurring substance characterized by their insolubility in water, greasy feel and solubility in organic solvents like ether, chloroform or other fat solvents.



CLASSIFICATION

On the basis of structure:

1. Simple Lipids : They are made up of three fatty acids attached to Glycerol. They are mixed triglycerides which means that more than one type of fatty acids present in the fat. E.g – Cooking oils and butter
2. Compound lipids: They are fats in which at least one fatty acid is replaced by carbohydrate, protein or Phosphorus. E.g – Glycolipids





3. Derived Lipids: They are the breakdown products of fats and include diglycerids, monoglycerids, glycerol and fatty acids.

4. Sterol: They are not made up of fatty acids and glycerol but have benzene ring structure. These fat like substance include cholesterol and fat soluble vitamins A, D, E, and K.





CLASSIFICATION



On the basis of fatty acids present

- 1. Saturated fatty acids:** In saturated fatty acids, each carbon atom in fatty acids carries all the hydrogen atoms possible.





FUNCTIONS



- ❖ Energy
- ❖ Thermal insulation
- ❖ Protein sparing action
- ❖ Protection of vital organs.





CLASSIFICATION



2. Unsaturated fatty acids: The full complement of hydrogen atoms is not received in unsaturated fatty acids. This leads to the formation of double bond between the atoms so they have one or more double bonds between the carbon atoms.

- Mono Unsaturated fatty acids
- Poly Unsaturated fatty acids





FUNCTIONS



- ❖ Synthesis of hormones
- ❖ Precursors of prostoglandins
- ❖ Absorption of fat soluble vitamins
- ❖ Essential fatty acids
- ❖ Satiety value





SOURCES



1. **ANIMAL FATS:** The major sources of animal fats are ghee, butter milk, chesses, egg yolk, meat and fish.
2. **VEGETABLE FATS:** Some plants store fat in their seeds. Eg – Groudnut, mustard, soybean, sesame, coconu.
3. **OTHER SOURCE:** Small quantities of fat are found in most other foods such as cereals, pulses and vegetables.





FAT REQUIREMENT



In developed countries dietary fats provide 30 – 40 percent of total energy.



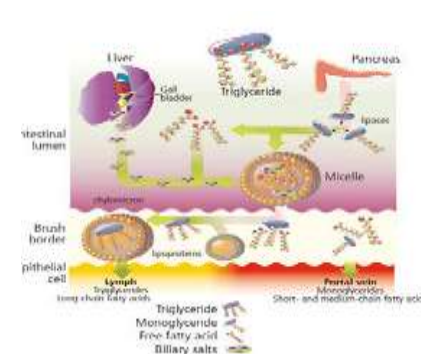


DIGESTION OF FATS



FIVE DIFFERENT PHASES

1. Hydrolysis of Triglycerides to free fatty acids and monoacylglycerols.
2. Solubilization of FFA and monoacylglycerols by detergents (bile acids) and transformation from the intestinal lumen towards the cell surface.

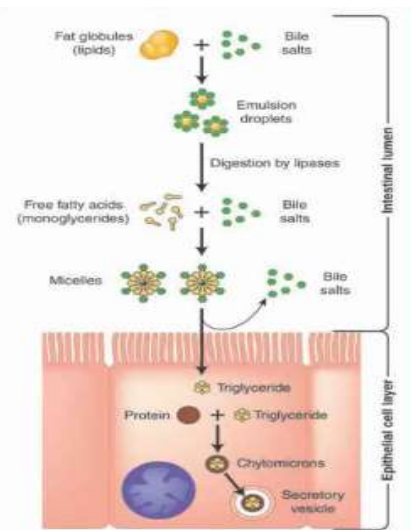




DIGESTION OF FATS

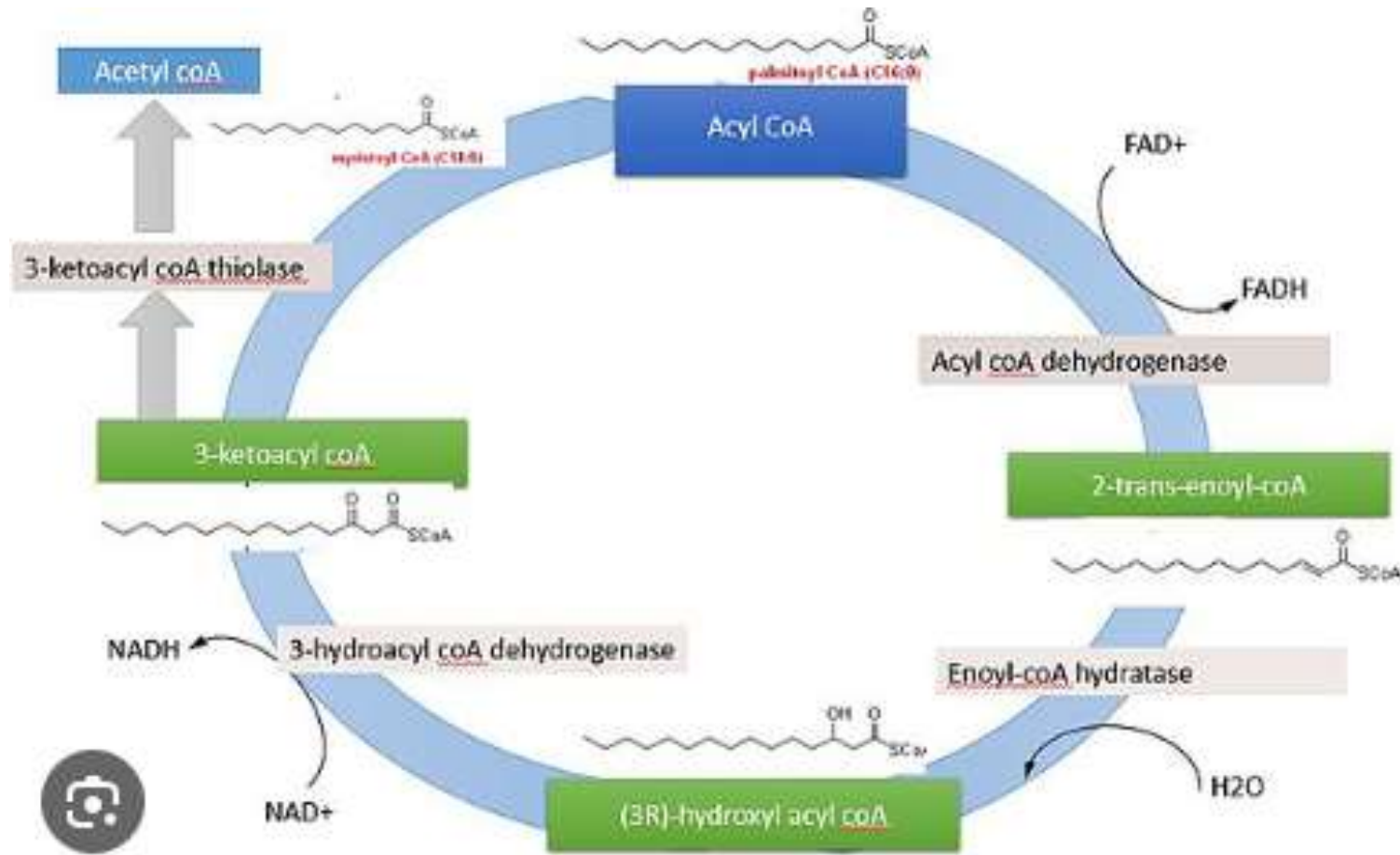


3. Uptake of FFA and monoacylglycerols into the cell and re synthesis to triglycerides.
4. Packaging of TG's into chylomicrons.
5. Exocytosis of chylomicrons into lymph.





FAT METABOLISM





EFFECTS OF DEFICIENCY

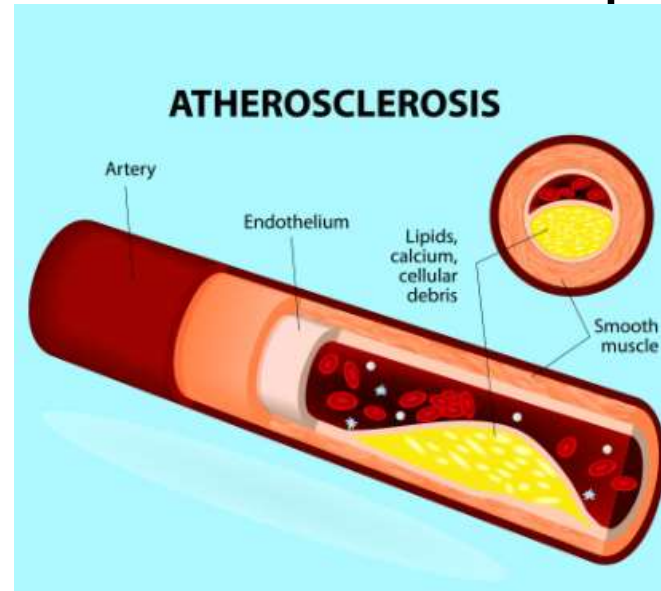


- ✓ A deficiency of fat may result in a deficiency of fat soluble vitamins which may affect the growth and weight of the children.
- ✓ Deficiency of essential fatty acids in the diet leads to a condition known as phernoderma or toad skin.



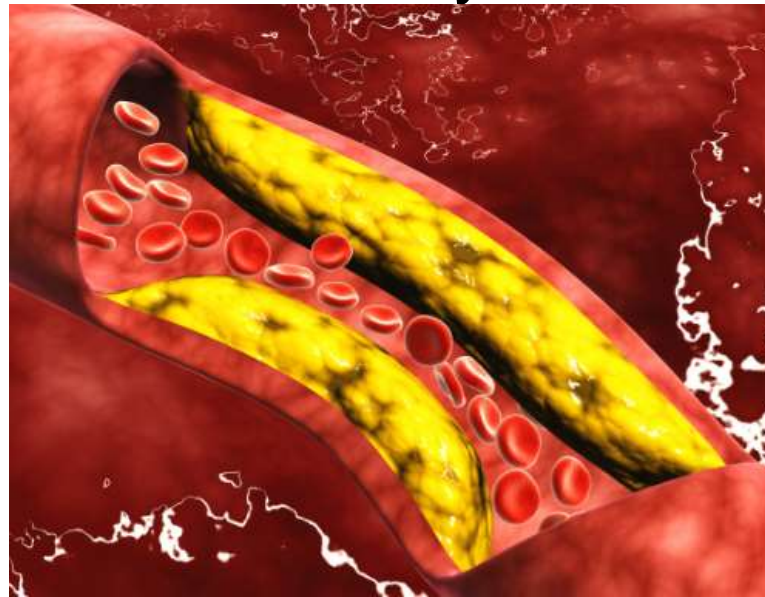
EFFECTS OF EXCESSIVE FAT

- ❑ The greater concern today is the problems related to excessive intake of fats. It can pose a threat to human health. Excessive fat causes obesity as it is stored in the adipose tissues.



EFFECTS OF EXCESSIVE FAT

Hypercholesterolemia and Coronary Heart Disease, when the blood cholesterol level is over 250mg per 100ml, the incidence of Atherosclerosis and coronary heart disease is high.





ASSESSMENT



- Define fat and classify it?
- Explain source of fat?
- Describe deficiency disorder.





REFERENCE

- Darshan sohi, “ A comprehensive textbook of applied Nutrition and dietetics” , 3rd edition, published by Jaypee publication.
- Shella John, Jasmine devaselvam, “Essentials of Nutrition and dietetics for nursing”, 2nd edition, published by Wolters Kluwer.
- <https://www.slideshare.net/aiswarya1995/balanced-diet-57863742>

