

- are defined by low solubility in water and high solubility in nonpolar solvents.
- Lipids are largely hydrocarbon in nature upon oxidation in metabolism.
- The lipids found in the body are purely hydrophobic.

Lipids 1

* hydrophobic (containing only non-polar group)

example :- triacylglycerols

amphiphatic (amphiphilic) → [they possess both polar

and non-polar] example :- Fatty acids

• Lipids are important constituents of nervous system

• maintain our body from loss of heat

• Lipids supply the body with Fatty acid that

can't be synthesized

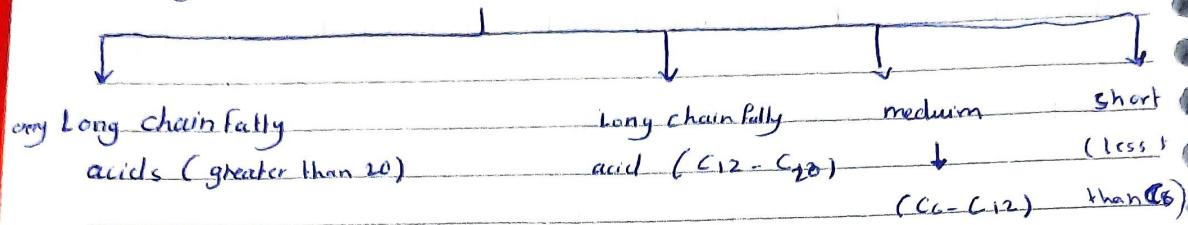
• cholesterol $\xrightarrow{\text{synthesis}}$ vitamin D, steroid hormones, bile acid and bile salts

• building block of Fats \rightarrow Fatty acids

• Fatty acid composed made up of ten or more

carbon atoms are nearly insoluble in water

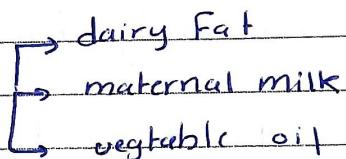
Fatty acid classified as



* example of short chain Fatty acids

- acetic acid (two carbon)
- propionic acid (three carbon)
- butyric acid (Four carbon)

- medium chain present in



example of mono unsaturated Fatty acid → olive oil
" " poly unsaturated " " → Fish, corn
and ~~sunflower~~ sunflower oil

* the number of double bond in unsaturated Fatty acid varies from 1 to 4

unsaturated has less energy than saturated Fat

carbon in nature and they
reduced forms of carbon and,
in metabolism, yield large amounts
hydrophobic [containing only non-polar or
example triacylglycerols] or **amphiphilic**
(amphiphilic), which means a
and nonpolar groups

Lipids 1

- * hydrophobic [containing only non-polar group]

- example :- triacylglycerols

- amphiphilic (amphiphilic) → [they posses both polar
and non-polar] example :- Fatty acids

- Lipids are important constituents of nervous system
its

- maintain our body from loss of ~~body~~ heat

- Lipids supply the body with Fatty acid that

- can't be synthesized

- cholesterol $\xrightarrow{\text{synthesis}}$ vitamin D, steroid hormones, bile acid
and bile salts

- building ~~block~~ block of Fats → Fatty acids

- Fatty acid composed made up of ten or more
carbon atoms are nearly insoluble in water

Lipids are defined by low solubility in nonpolar solvents.
cholesterol, sphingolipids, and vitamins A, D, E, and K are examples.
Lipids are largely hydrocarbon in nature.
high solubility in nonpolar solvents.
Lipids are reduced forms of hydrocarbons.
represent highly reduced forms of hydrocarbons.
upon oxidation, they release energy.
The lipids found in plants are called **phytolipids**.

Fatty acid classified as

Very Long chain fatty acids (greater than 20)
Long chain fatty acid ($C_{12} - C_{20}$)
medium chain fatty acid
Short chain fatty acids ($C_6 - C_{12}$)

* example of short chain Fatty acids

- acetic acid (two carbon)
- propionic acid (three carbon)
- butyric acid (Four carbon)

medium chain present in

dairy Fat
maternal milk
vegetable oil

example of mono unsaturated Fatty acid \rightarrow olive oil

" " poly unsaturated " " \rightarrow Fish, corn

and ~~safflower~~ sunflower oil

* the number of double bond in unsaturated fatty acid varies from 1 to 4

unsaturated has less energy than saturated Fat

- The ^{non-polar} hydrocarbon ^{Polar} in nature and the ^{highly reduced forms of carb-} upon oxidation in metabolism ^{and} of energy.

unsaturated Fatty acid more abundant than saturated especially in higher plants

saturated → palmitic acid C₁₆
→ stearic acid C₁₈

un飽和脂肪酸
unsaturated → oleic acid 18:1 (g)
(vitamin E)

Animal contain → saturated
monoinsaturated long chain

vegetables oil → poly unsaturated

Numbring carbon atom in fatty acids

1. Delta Δ الترتيب يبلش هنا
carboxyl group 1 C

example: arachidonic acid 20:4 Δ 5, 8, 11, 14

2. w (omega system) methyl الترتيب يبلش هنا
group 1 C

arachidonic (w₆ n-6.)

Linoleic acid (w6) اسفله → Linoleic C 18:3 Δ 9, 12, 15
(w-3)

(W-6) Linoleic acid (essential fatty acid)

is the precursor of

arachidonic acid

(poly unsaturated present in)

the phospholipids
of cell membrane

is the substrate for
prostaglandin synthesis

is important mediator
in pain and inflammatory
responses

2. α-linoleic acid

is the precursor of

w-3 Fatty acids

important for

growth

development

decrease in
linoleic acid
lead to
1. altered learning
behavior

2. decreased
vision

steroids, phospholipids, hormones, fat-soluble vitamins, and others. Solubility in water is low in non-polar solvents. Solubility in polar solvents is high. They are largely hydrophobic in nature. Upon oxidation in metabolism, they are largely reduced forms of energy.

The lipids found in biological membranes are largely hydrophobic (lipid bilayer). The example tried is amphiphiles and polar lipids.

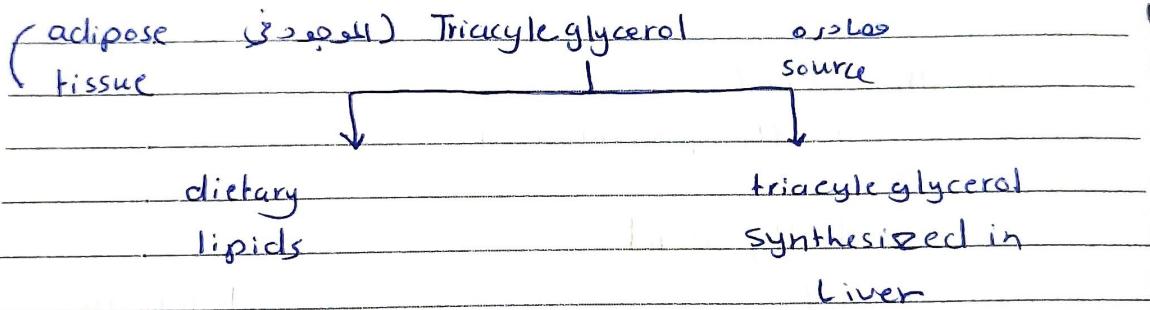
Lipids 2

Triacylglycerols

main component of animal fat found in adipose tissue.

- main component of vegetables oil
- Most of natural plant and animal composed of mixtures of simple and mixed triacylglycerol.

storage site for lipids (adipose tissue)



complete oxidation of 1 g triacylglycerols yield 38 kJ of energy

Lipids are defined as esters of long-chain fatty acids with glycerol or other alcohols. They also contain polar groups such as amino acids, phosphate groups, and hydroxyl groups. Lipids are found in all living organisms and are essential for the structure and function of cells.

Lipids are defined as esters of long-chain fatty acids with glycerol or other alcohols. They also contain polar groups such as amino acids, phosphate groups, and hydroxyl groups. Lipids are found in all living organisms and are essential for the structure and function of cells.

phospholipids:

- The common alcohol moieties of phosphoglycerids

are

1. serine
2. choline
3. inositol