, phospholipids,
ormones,
-soluble vitamins
others.
• are defined by low solubility in nonpolar solvents.
high solubility in nonpolar solvents.
• Lipids are largely hydrocarbon in nature -
represent highly reduced forms of
upon oxidation in metabolism
of energy.
• The lipids found
purely hydroph
ev

Lipids 1

* hydrophopic [containing only non-polar group)
example :- triacylglycerols

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

- Lipids are important constituens of nervous system
- maintain our body from loss of its heat
- Lipids supply the body with Fatty acid that can't be synthesized
- cholestrol synthesis → vitamin D , steriod hormones, bile acid and bile salts
- building block of Fats → Fatty acids
- Fatty acid made up of ten or more carbon atoms are nearly insoluble in water

Fatty acid classified as

- very Long chain Fatty acids (greater than 20)
- Long chain Fatty acid ($C_{12}-C_{20}$)
- medium (C_6-C_{12})
- short (less than 6)

* example of short chain Fatty acids

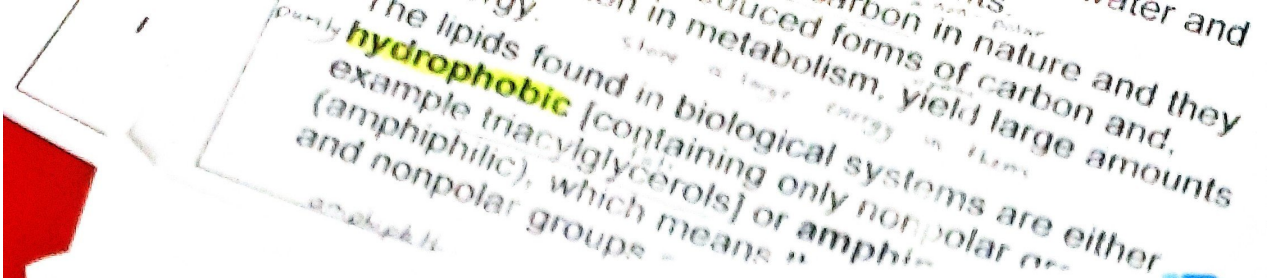
- acetic acid (two carbon)
- propionic acid (three carbon)
- butyric acid (Four carbon)

- medium chain present in
  - dairy Fat
  - maternal milk
  - vegtable oil

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

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

unstaurated has less energy them saturated Fat



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" " poly unsaturated " " → Fish, corn and ~~sunflower~~ sunflower oil

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

unstaurated has less energy them saturated Fat

...ydrocarbon in nature and ... highly reduced forms of carb...
upon oxidation in metabolism ...
of energy.

unsaturated Fatty acid more abundant than staturated espically in higher plants

- saturated → palmitic acid C_{16}
  → stearic acid C_{18}

- unsaturated → oleic acid 18 : 1 (9)
  (vitamin B)

- Animal contain → saturated
  → mono unsaturated long chain

~~oil~~ vegtables oil → poly unsaturated

- Numbring carbon atom in fatty acids

1. Delta Δ   الترقيم بيلش فن عند
   carboxyl group 1 C

example :- archodinic acid 20 : 4 $\Delta^{5, 8, 11, 14}$

2. ω (omega system)   الترقيم بيلش من methyl
   group 1 C

archodinic (ω6 n-6)

~~Linolic~~ Linoleic acid (ω6)   اسرفي →   linolein c $18:3^{\Delta 9, 12, 15}$
(ω-3)

(ω-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-linolenic acid

↓ is the precursor of

ω-3 Fatty acids

↓ important for

growth

development

decrease in linolenic acid lead to

1. altered learning behavior

2. decreased vision

Lipids 2

Triacylglycerols

main component of animal fat Found in adipose tissue.

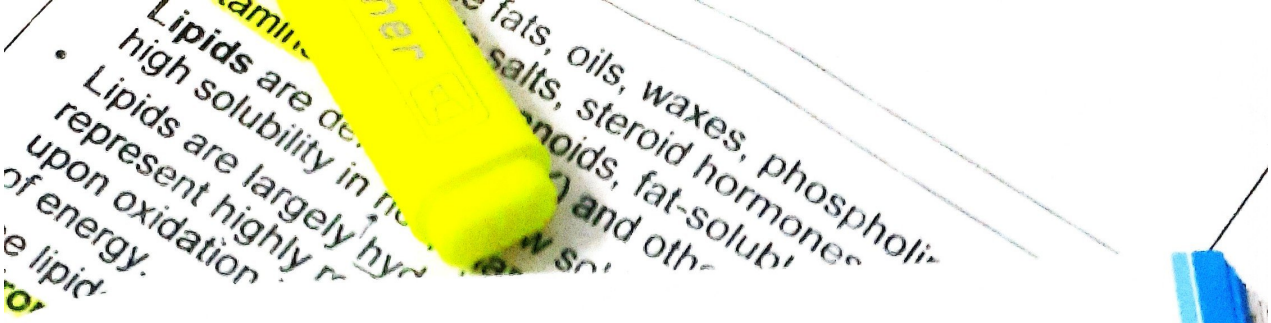
- main compenent of veglables oil
- Most of natural plant and animal composed of mixtures of simple and mixed triacylglycerol.

storage site for lipids (adipose tissue)

(adipose tissue) (الموجودة في) Triacyle glycerol مصادره source

- dietary lipids
- triacyle glycerol synthesized in liver

complete oxidition of 1 g triacyl glycerols yeild 38 kj of energy



phospholipids:

- The common alcohol moieties of phosphoglycerids are
  1. serine
  2. choline
  3. inositol