

# Unit -4

# Lipids

Unit - 4

Lipids

(Lipids)



\* Definition →

- Lipids are organic compounds

• 1<sup>st</sup>

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- are organic compounds

soluble in water

- are water insoluble

\* Classification →

# Biochemistry II D Pharm 2nd Year

Unit - 4

Lipids

(Lipids)

\* Definition →

- Lipids organic compounds •  $C, H, O$   
↳ fat and oil  $C, H, O$   
Higant  $C, H, O$
- $C, H, O$  molecules  $C, H, O$  chemical  
compositions oxygen, carbon, hydrogen  
and include  $C, H, O$
- $C, H, O$  natural formula.  $C, H, O$ .

↳  $C, H, O$

- $C, H, O$  organic compounds  $C, H, O$   
soluble  $C, H, O$
- $C, H, O$  water  $C, H, O$  Insoluble  $C, H, O$

\* classification →

- ↳ simple lipids -  
a) Triglycerides.  
b) waxes.
- ↳ compound lipids →  
a) Phospholipids

- b) Glycolipids
- c) Lipoproteins.

3) Derived lipid →

- a) steroids
- b) fatty acids.
- c) ketone bodies.

4) Miscellaneous lipids →

- 1) Simple lipids -
  - $n^2$  fatty acids or esters of  $n^2$  alcohols or glycerol contain  $n^2$

and  $n^2$

- And if other substances carry  $n^2$  or  $n^2$

a) fats and oils →

- if fatty acids or esters of  $n^2$  and glycerol contain  $n^2$  or  $n^2$

b) waxes →

- if long-chain saturated and unsaturated fatty acid esters of  $n^2$  or  $n^2$
- short molecular weight high

எனது உயிர்

② Compound Lipids →

- of fatty acids or esters உயிர் உயிர்
- Alcohol, சர்க்கரை fatty acid and other groups contain and உயிர்

உயிர்

- Phospholipids.
- Glycolipids.
- Lipolipids.

③ Derived lipids →

- of lipids simple and compound lipids or hydrolysis of contain

உயிர் உயிர் உயிர்

- of fatty acid include and உயிர்

- Carotenoids
- Steroids.
- Terpenes.

\* Fatty Acids -

\* Definition →

- fatty acids, Aliphatic monocarboxylic acids & are mostly natural fats and oils are hydrolysis of obtained from
- General formula -  $R-\overset{O}{\parallel}(CH_2)_n-COOH$

\* classification →

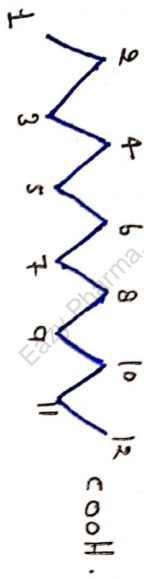
1) Chemical classification of fatty acids -

a) saturated fatty acids →

- saturated fatty acids are chain of double bond contain one or more than one double bond or solid like -
- lauric acid
- caproic acid
- butyric acid

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Lauric acid

② Unsaturated fatty Acids →

• If of fatty acids are in hydrocarbon chain or double bond on more contain are it

• If room temperature are liquid

• are it

like - stearic acid, oleic acid etc.



• Palmitoleic acid -  
• If are fats are are it

one double bond

\* Nutritional classification of fatty acids →

1) Essential fatty Acids →

• If of fatty acids are it are body are are

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एक प्रकार की

like - Anachidonic acid

- Linoleic acid
- Linolenic acid.

• ये diet से obtain कर सकते हैं।

b) Non-essential fatty acids →

- ये all fatty acids हैं जो हमारे body में बन सकते हैं।

eg - Palmitic acid  
• stearic acid

\* Difference b/w saturated and unsaturated fatty acids -

S/W	saturated	unsaturated
1.)	fat (ठोस)	oils (द्रव)
2.)	solid at room temperature	liquid at room temperature.
3.)	Animals में पाए जाते हैं।	Plants में पाए जाते हैं।
4.)	example - cream • meat • Butter	coconut oil etc.....

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**\* Structure And Properties**

**of Tri-llycerides -**

(fats and oils)

**\* Definition →**

• Triglycerides organic compounds

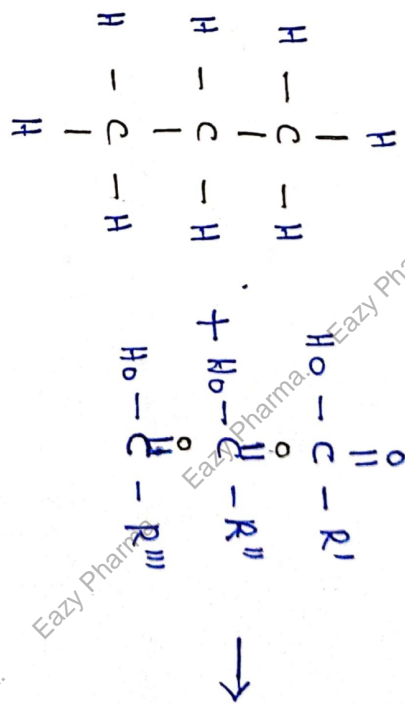
formed by their three different

fatty acids, ester bond and

help by glycerol by linked

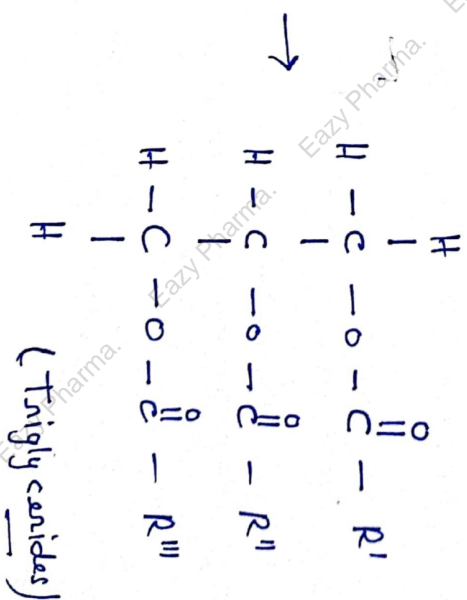
with by

**\* Structure →**



(Glycerol)

(3-fatty acids)



\* Properties →

- It is water insoluble एीर ई/
- Organic compounds में soluble एीर ई/
- Non - polar एीर ई/
- Nature में hydrophobic एीर ई/
- Pure fat and oils colourless, odourless and tasteless एीर ई/

It.....

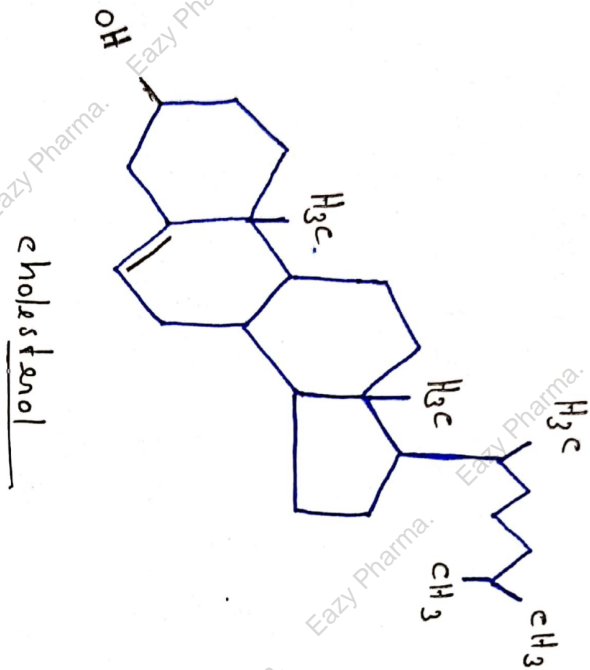
\* Structure and functions

of cholesterol in the body

\* Definition →

- cholesterol is a waxy substance एीर ई में naturally body में cell wall on cell membrane में present एीर ई/
- Body cholesterol are used different hormone and produce energy में on एीर ई/

\* Structure →



\* Functions →

- It helps in the formation of Vitamin-D
- It helps in the production of bile

• It acts as a hormone and helps in the synthesis of cholesterol

• It is the source of Vitamin-D

• It converts cholesterol to bile

• It is a component of nerve fibers and insulin

• It is a component of cell membranes

• It is a component of cholesterol and bile acids

• It helps in the conversion of cholesterol to bile acids

.....

### \* Lipoproteins -

#### \* Definition →

- ಸಹಿ conjugated protein ರೊಂದಿ ಟಿ
- Lipoproteins, lipid and protein combination ಟಿರ ಟಿ
- Blood plasma ರ್ನಿ ಸುಗುರ್ ರ್ನಿ lipid transporters ರ್ನಿ ದುರು act ರ್ನಿ ಟಿ
- ರ್ನಿ lipid components ಡಿಲಿ - cholesterol, triacylglycerol etc.

ಒಂನಿ various ರ್ನಿ deliver ರ್ನಿ ಟಿ  
ಒಂನಿ ರ್ನಿ ಡಿಲಿ

#### \* Types →

- ಸಹಿ density ರ್ನಿ base ರ್ನಿ classified ಡಿಲಿ ರ್ನಿ ಟಿ
- 1) chylomicrons (ಒಂನಿ ರ್ನಿ ರ್ನಿ)
  - ರ್ನಿ intestinal ರ್ನಿ synthesized ಡಿಲಿ ರ್ನಿ ಟಿ
  - ಸಹಿ highest quantity ರ್ನಿ lipid (99%) and protein lowest (1%) ಟಿರ ಟಿ

- density में lowest होता है।
  - size में largest होता है।
- 2) VLDL (Very low density lipoproteins) -
- यह liver and intestine में produce होता है।
  - Protein (10%) and lipid (90%)
- 3) LDL (Low density lipoproteins) -
- यह blood stream में produced होता है from VLDL
  - यह cholesterol और liver में rest body में transport करता है।
- 4) HDL (High density lipoproteins) -
- यह liver में produced होता है।
  - यह cholesterol और peripheral tissues में liver में transport करता है।
- \* Functions →
- Lipids are liver में tissues में transport करता है।
  - Lipids are tissues में liver में transport करता है।

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**THANK YOU.**

**By Dr Firoz khan**

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