

Classification and storage of lipids

Lipids are heterogeneous group of water insoluble compounds which are oily or greasy in consistency but soluble in non-polar solvents like ether, chloroform, benzene etc.

For examples, fatty acids, fats, oils, waxes, certain vitamins and hormones are considered as lipids. Lipids are composed of C, H, O, like carbohydrates but poor in oxygen and therefore require more oxygen for oxidation to release energy.

Lipids are stored in the following forms or classified as follows:

- Simple lipids
- Complex lipids
- Derived lipids
- Neutral lipids
- Miscellaneous lipids

I. SIMPLE LIPIDS:-

Esters of fatty acids with glycerol.

Mainly of two types:-

- i. Fats and oils: -These are esters of fatty acids and glycerol. - difference b/w fats and oils is physical.
- ii. Waxes : -Esters of fatty acids+alcohol other than glycerol. -Cetyl alcohol is most commonly used

II COMPLEX OR COMPOUND LIPIDS:-

Esters of fatty acids+Alcohol+other groups like phosphate, Nitrogenous base, carbohydrate, Protein, etc.

Based on the group present they are further classified into:-

i. PHOSPHOLIPIDS:-

F.A+Alcohol+phosphoric acid as nitrogenous base.

Based on the type of alcohol present they are again divided into

- Glycerphospholipids:Contain Glycerol as alcohol. Eg:lecithin &cephalin
- Sphingophospholipids : Contain sphingosine as alcohol. Eg: sphingomyelin

ii.GLYCOLIPIDS:-

- Fatty acids+alcohol+carbohydrate as nitrogenous base.
- They contain sphingosine as alcohol and hence also known as GLYCOSPHINGOLIPIDS.

- Eg: Cerebrosides and Gangliosides.

iii. LIPOPROTEINS:- • Macromolecular complexes of lipids with proteins.

- Eg: LDL, VLDL, Chylomicrons, HDL, etc

iv. Other complex lipids:- • Sulfolipids, Aminolipids and other Lipopolysaccharides come under this.

DERIVED LIPIDS:-

These are the derivatives of hydrolysis of simple and complex lipids which possess the characteristics of lipids.

These include:

- Lipid soluble vitamins
- Steroid hormones
- Hydrocarbons
- Ketone bodies
- Mono and diacylglycerol ,etc

NEUTRAL LIPIDS:-

- These are the lipids which are uncharged and are referred as neutral lipids.
- These are mono, di and triacylglycerols, cholesterol and cholesteryl esters.

MISCELLANEOUS LIPIDS:-

- A large number of compounds possess characteristics of lipids, such compounds come under this category
Example: carotenoids, squalene, hydrocarbons like pentacosone and terpenes etc.