

3 IODINE NUMBER.

Definition: The iodine value also known as **iodine absorption value** or **iodine number**. In chemistry is the mass of iodine in grams that consumed by **100** grams of a chemical substance.

Iodine number are often used to determine the amount of **unsaturation** in fatty acid. This unsaturation is in the form of **double bonds** which react with iodine compounds

Frequently used to determine adulteration of commercial lots of **oil**.

4 LECITHIN.

Definition: Lecithin is a **fat** that is essential in the cells of the body.

Lecithin are derivate of alpha phosphatidic acid in which **choline** joined to **H3PO4** .

They are **amphiphilic** – attract both water and fatty substances used for smoothing food , textures ,emulsifying, homogenizing liquid mixtures.

Lecithin used for treating **memory disorders** such as **dementia** , **Alzheimer's diseases**. Also used for treating **gall bladder** diseases, **liver** diseases. Some people apply Lecithin to skin as **moisturizer**.

5 TRIGLYCERIDES.

Definition: Triglycerides are the **ester** derived from **glycerol** and **three fatty acid**.

Triglycerides are a type of fat found in your **blood**.

When we eat, our body converts calories in triglycerides to store it later hormones releases triglycerides for energy.

Low and high triglycerides level increase risks of developing disease.

Normal level of triglycerides is less than 150 milligram per deciliter or less than 1.7 millimoles per liter.

Q2 what are the lipids? What is the difference between fats and waxes what is the importance of lipids in our body?

LIPIDS:

DEFINITION; lipids are diverse group of **organic** compounds including **fats, oils** and hormones that are insoluble in **water**.

Lipids are molecules that contain **hydrocarbons** and make up the building blocks of the structure and function of **living cells**.

Lipids are non polar and classify into **simple, compound and derived**.

FATS.	WAXES.
Fats are made of glycerol and three fatty acid.	Waxes are fatty acids with alcohol .
Fats are solid substances serves as energy sources in the human body.	Waxes are distributed in animals and plants. Low melting point solids.
Fats are saponified by means of either aqueous or alcoholic alkali.	Waxes are only saponified by alcoholic alkali.

IMPORTANCE OF LIPIDS IN THE BODY.

- **1 gram** of lipid produces about **9.1** kilocalories.
- They provide a high energy about **25%** more than carbohydrates and proteins.
- They are more **palatable** and **storable** to unlimited amount compared to carbohydrates.
- Supply the body with fats- soluble **vitamins A,D,E,K**.
- They are the important constituent of the **nervous system**.
- Provide **protective coating** and help certain organs to keep them in position
- LIPIDS are **thermal insulator**.

- **Structural** components of the membranes.
- Lipids are the precursor of other compounds e.g **cholesterol, prostaglandins and ketone bodies.**
- Lipids under the **skin** prevent excessive **loss of water** and **electrolytes.**
- **Lipid** help in transportation of fat soluble compounds across the cell membrane.
- **Lipid** protect the body against the injurious **effect** of water soluble substances.

Q3 what are prostaglandins and what are their function?

PROSTAGLANDINS:

Prostaglandins are hormones formed in almost all **tissues** rather than in specialized **glands**. **PGs** have been detected in almost every mammalian **tissues** and **body fluid**. They are produced in minute amount and have **broad spectrum** and **diverse** biological effects.

PGs are converted to inactive form at the site of production. They are not stored and formed of **20 C** unsaturated fatty acid known as **prostanoic acid**.

FUNCTION OF PROSTAGLANDINS

- Causes smooth muscle contraction.
- Increases intestinal motility.
- Causes contraction of uterus.
- Regulates menstruation and fertility.
- Prevent and alleviate stomach ulcers.

- Induce labour.
- Control inflammation.
- Lower blood pressure.
- Inhibit release of fatty acid from fats.

Q4 what are fatty acid how fatty acids are classified ?

FATTY ACID:

Definition: organic compounds occur in nature and are **aliphatic monocarboxylic acid** made up of hydrocarbon chains

- They are the major components of lipids.
- They are made up of not less than **2 carbon atoms**.
- Commonly contains 16-18 carbon atom.

CLASSIFICATION OF FATTY ACID.

- Saturated fatty acid.
- Unsaturated fatty acid.

SATURATED FATTY ACID

- They are the fatty acids which do not contain any **double bond** e.g **butyric acid**
- The saturated fatty acid below **8 carbon** in length are liquid at room temperature and are **volatile**.

UNSATURATED FATTY ACID.

They contain fatty acid with double bond

- **Contributed to**
 - 1 Monounsaturated fatty acid.
 - 2 Polyunsaturated fatty acid.

MONOUNSATURATED FATTY ACID.

- Contain **one double bond** e.g **oleic acid**.
- Found nearly in all fats.

POLY UNSATURATED FATTY ACID.

- Contain more than one double bond .
- There are **three polyunsaturated fatty acids** of biological importance e.g **Linoleic acid**.
- They are known as essential fatty acids.
- They are not synthesized in the body.
- Lack of essential fatty acid can produce growth retardation and other deficiency symptoms.

Q5 short note on the following

LIPOPROTEINS:

- **Lipids** are transported in the blood as lipoproteins.
- The major composition of lipoproteins is triacylglycerol, cholesterol esters, cholesterol, phospholipids and purified proteins.
- Lipoproteins are of five proteins
 - 1 **Chylomicrons** (are the least densely all blood **lipoproteins**).
 - 2 **very low density lipoproteins** (they are the denser than chylomicrons .
 - 3 **Intermediate lipoproteins** (it is produced in peripheral tissue from very low density lipoproteins).
 - 4 **Low density lipoproteins** (it is produced in the liver by degradation of IDL).
 - 5 **High density lipoproteins** (synthesized by liver and released in to blood).

CHOLESTEROL:

- It is an important of **plasma lipoproteins and structural** component of cell membrane.
- It is the most abundant **animal sterol**.
- The human body can synthesize about **3gm** of cholesterol/day.
- Liver plays a central role in the regulation of body's **cholesterol balance**.
- Blood cholesterol normal level is **150 – 250 mg/dL** and it's variation is very good indicator of certain diseases.
- Prevent water evaporation from the **skin**.
