**SHREE H N SHUKLA NURSING INSTITUTE- RAJKOT**

B.Sc. NURSING I YEAR SUBJECT-NUTRITION

UNIT- 3 FAT

FAT:

* fat is made up of three fatty acid and glycerol is also known as triglyrol. It is one of three main macronutrient.
* There are two essential fatty acid alpha-linolenic acid (omega 3 fatty acid) and linolenic acid (omega 6 fatty acid).
* It is the gtreatest source of energy.
* Triglycerides: Three fatty acids connected to a glycerol backbone.

**Fatty Acids and Rancidity**

* Rancidity: spoiling of fats through oxidationMore double bonds therefore more susceptible to oxidation and rancidity
* PUFA > MUFA > Saturated fatty acids
* Enhancing stability of fatty acids by reducing rancidity
  + Adding antioxidants
  + Limiting food exposure to oxygen, heat, and light
  + Hydrogenation

**Classification of fatty acid:-**

* Saturated fatty acid
* Unsaturated fatty acid
* Polyunsaturated fatty acid

1. Saturated fatty acid: All the carbons on the fatty acid are bound to hydrogen. It is Solid at room temperature and having Higher melting point.
2. Unsaturated fatty acid: Some carbons on fatty acid form a double bond with each other instead of binding to hydrogen. Monounsaturated fatty acids (MUFA)-Has one double bond. Polyunsaturated fatty acid (PUFA)- Has two or more double bonds It is Liquid at room temperature and having Lower melting point.

**Hydrogenation**:

when the vegetable oil are hydrogenated under the condition of optimum temperature and pressure in the presence of nickel catalyst, the liquid oil are converted into semisolid or solid fat.

It is fortified with vitamin A and D.

**Refined oil:** refining is usually done by treatment with steam and alkalin to remove the free fatty acid and rancid material. Its improve the quality and taste of oils.

**Type of fat:**

1. visible fat: visible fatr are those which we are seperated from their natural sources. Eg ghee from milk, cooking oil from seed and nuts.
2. Invisible fat: invisible fat are those which we cant see by naked eye. Eg : cereals,pulses, milk and egg.

**Caloric values:-** 1 grams of fat provides 9 cal.

**Dietary sources:-**

1. Animal fats: ghee, butter, cheese,egg, fish, meat and milk
2. Plant fats: ground nuts,soya bean, almond, cashewnut.etc.

**Function of fat:**

* Source of energy
* Form body structures
* Regulate metabolism
* Enhance absorption of fat-soluble vitamins
* Provide insulation to help regulate body temperature
* Cushion major organs

**Fat Metabolism:**

* Except the central nervous system and red blood cell all other cell and tissue of body oxidixe fatty acid and yield energy.
* The oxidation of fat occurs in mitochondria.
* Beta oxidation is major pathway for fat oxidation.
* Fatty acid converted into acetyl CoA.
* Before the triglyride is hydrolyzed into fatty acid and glycerol.
* Acetyl coA enter to the citric acid cycle.

**Malnutrition:**

The deficiency of fatty acid leads to a condition as phenoderma or tod skin.

Over use:

1. Obesity : excessive intake of fat lead to excessive storage of fat in to adipose tissue and its leads to obesity.
2. Cardiovascular disease: there are excessive in take of cholestrol and triglyceride are associated with the coronary artery disease and other problem. They are leading causes of death.