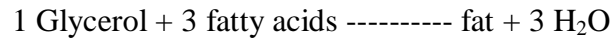


Lecture 5

FATS

Fats are essential components of all cells. The distinction between an oil and a fat is simply that at a normal temperature oils are liquid and fats are solid. A molecule of fat consists of glycerol, a trihydroxylic alcohol, esterified with three open chain fatty acids.



Fats supply essential fatty acids needed for adequate nutrition and normal health. They are mainly included as energy sources as they furnish 9.3 calories per gram compared to 4.1 calories per gram from carbohydrate. Fats are found in foods of animal and vegetable origin, we have “visible” fat such as butter, palm oil, groundnut oil and fat in pork, but fat can also be “invisible” like the fat contained in egg yolk, fish, oil seeds.

Functions

- Supply energy, a concentrated energy source
- Fats act as carriers for vitamins A, D, K
- Fats are important for maintenance of the skin and coat
- Steroids hormones and cholesterol are also fats
- Insulation of organs and storage of fat soluble vitamins
- Improves palatability
- Reduce dustiness of feed especially cassava and sweet potato based diets
- Protection and insulation

The common dietary fat is the triglyceride composed of both saturated, monosaturated and polyunsaturated fatty acids. Levels of up to 20% are acceptable in the diets, however, large levels may reduce feed intake and other essential nutrients thereby resulting in reduced growth.

There are four (4) essential fatty acids dietarily – Oleic, Linolenic, Linoleic and Arachidonic. Deficiency of these fatty acids leads to defective growth, dry hair, scaly skin and susceptibility to infections. These essential fatty acids are found in soyabean oil and groundnut oil. Another problem with fat inclusion is the problem of RANCIDITY.

Lipids are classified into:

(a) Simple (Neutral) lipids

- (1) Fats and oils (2) Waxes

(b) Compound lipids

- (1) Phospholipids (phosphatides) e.g. Lecithins, Cephalins, Sphingomyelins
(2) Glycolipids e.g. cerebrosides, sialic acid, gangliosine

(c) Derived lipids

- (1) Sterols (2) Bile acids

Food may contain any or all of these substances, but those of greatest concern are the fats or glycerides and phospholipids.