

Nutrition for Nurses

Nutrition and Human Welfare

By

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Fats

Fats include all fatty materials like fats from meat, butter, oils, oil seeds and nuts. We have already seen that in the plants fuel is stored as starch. Fuel is stored in its most compact form as fat both in animal and in vegetable foods. Fat is therefore the most concentrated form of all energy foods.

Fats are compounds of fatty acids and glycerol. They are not soluble in water. They dissolve in liquids like petrol, chloroform or ether. These liquids are known as fat solvents. When an alkali like caustic potash is added to fats, soap is formed with the separation of glycerol. This procedure is called saponification. All natural fats can be saponified, while mineral oils like paraffin cannot be saponified. The non-saponifiable fraction of fats contain the fat soluble vitamins, and other nutrients. Chemically, fats have the same elements as carbohydrates, carbon, hydrogen and oxygen, but in different proportions. Fats have more hydrogen in their composition.

The nature of a fat varies with the type of fatty acid it contains. For example, the distinctive flavour of butter is due to its fatty acid, butyric acid, and caprylic acid gives the characteristic odour to coconut oil. Fatty acids are divided into two groups. The unsaturated and the saturated fatty acids. Unsaturation means that they can take in more hydrogen in their molecule. Fats which contain predominantly unsaturated fatty acids are liquids *i.e.*, oils at room temperature. When such fats are refined and hydrogenated, they become solids. Many such products are available in the market at the present time. Research work has shown that some of the un-

saturated fatty acids are highly essential for good health.

All common edible fats have the same fuel value. Some natural fats contain some other nutrients mixed with them. Fats can be formed from carbohydrate by both plants and animals. If an individual eats more starchy food than is needed for the physical work he does, the excess of carbohydrate is changed into fat and laid down in the body.

Being a concentrated fuel food, fats reduce the total bulk of food required. Fats are also stored as reserve fuel and used in time of need and emergency. Thus, human beings can starve for a number of days without taking food. Fat acts as padding and gives protection against mechanical injuries to the structures embedded in it—nerves, blood-vessels, the viscera and kidneys. Fat is also an insulating material, especially under the skin, guarding us from the effects of exposure to cold and heat. Fat gives roundness and shape to the body. It has staying power, that is, it satisfies the appetite for a longer period than other foods, because its digestion and absorption are the slowest. It delays the emptying of the stomach. It promotes the contraction of the gall bladder and prevents biliary stasis.

Fats are solvents for the fat soluble vitamins A.D.E. and K. Therefore in the diet, they facilitate the absorption of the fat soluble vitamins through the intestinal wall. However an excessive amount of fat in the diet carries away the vitamins through the faeces to be excreted as in coeliac disease. Mineral oils also carry away the fat soluble vitamins. Animal fats like fish liver oils, butter and cream supply the fat soluble vitamins. All

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