

Block 2

Basic Concepts in Nutrition

By: Prof. Rekha Sharma Sen



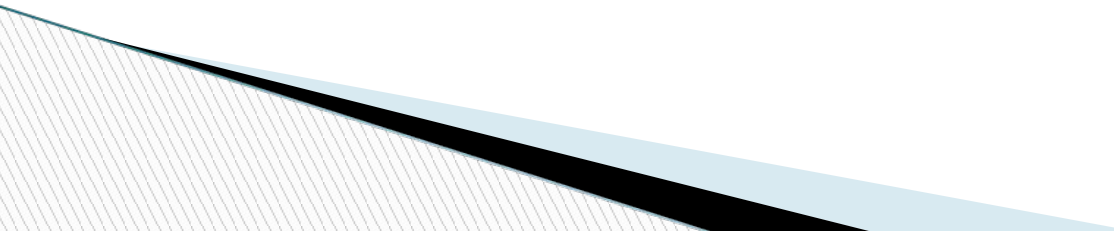
Unit 5

The Macronutrients-2: Proteins and Fats

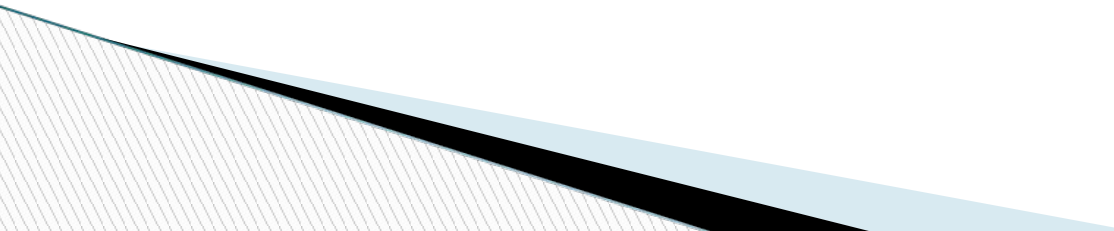
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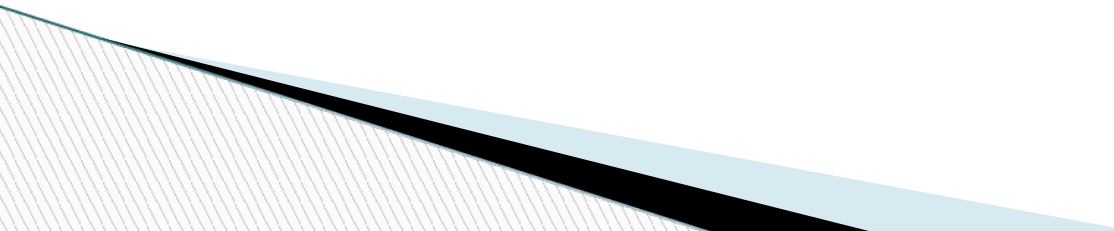


Objectives

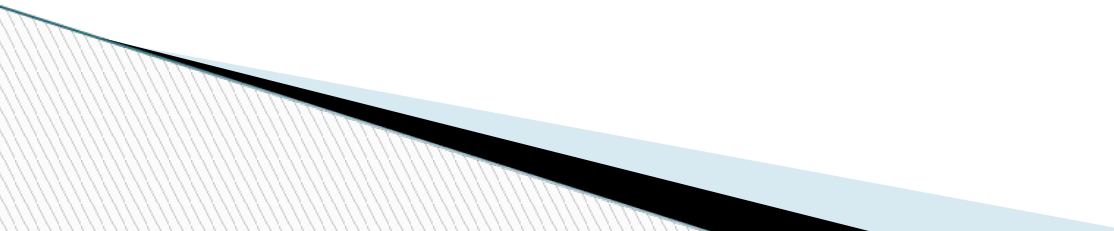
- **List the food sources of proteins and fats**
 - **State the role of proteins and fats in the body, and**
 - **Describe the processes of digestion, absorption and utilization of proteins and fats in the body.**
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Proteins

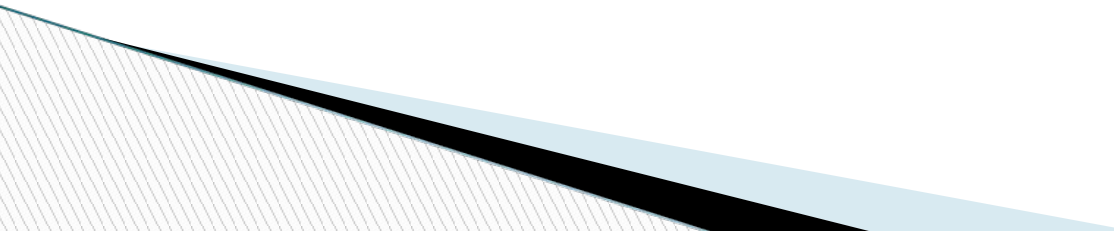
- ❑ **The basic building blocks of proteins are amino acids. Proteins are built up of just 22 amino acids in varying proportions and sequences. However, food has almost endless variety of proteins.**
 - ❑ **There are about 8 amino acids which cannot be manufactured by body and must be supplied by food. These are called Essential amino acids.**
 - ❑ **Non essential amino acids are manufactured by our body and need not be provided by food.**
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- ❑ **The proteins in animal foods contain all essential amino acids in the required amounts and proportions.**
 - ❑ **Proteins in plant food lack one or two essential amino acids. So quality is poorer. Combining them improves the quality of protein in meal. eg: dosa; dal-roti, daliya**
 - ❑ **FOOD SOURCES: Milk, milk products, flesh foods, eggs, nuts and oilseeds, soyabean and pulses.**
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FUNCTIONS:

- Body building: building new body tissues and for replacement of worn out tissues.**
 - Regulatory and protective functions: Enzymes are required for digestion of food. Hormones are also important for regulation of metabolism and other body processes. Proteins are part of these.**
 - Proteins as carriers: act as carriers. Like Haemoglobin (Hb) carries oxygen from lungs to various body tissues. Hb contains protein.**
 - Energy Giving Function: Each gm of protein yield 4 Kcal.**
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Digestion, Absorption and Utilization

- ❑ **Digestion of proteins involve the breakdown of amino acid chains to their constituent amino acids.**
 - ❑ **Protein digestion mainly occurs in stomach and small intestine. After digestion, amino acids are carried further by the blood to the liver. Some are used for building of blood proteins, some are retained in liver and rest enter blood circulation are taken up by body tissues for protein synthesis whenever needed.**
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Fats

- ▣ **Fats and Oils made up of fatty acids. Needed mainly because these supply essential fatty acids.**

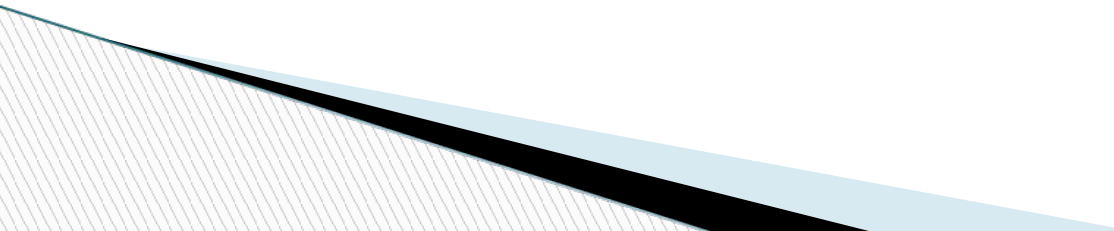
SOURCES:

Ghee, Butter, Mustard Oil, groundnut Oil, Soya Oil, coconut oil. 100% fat.

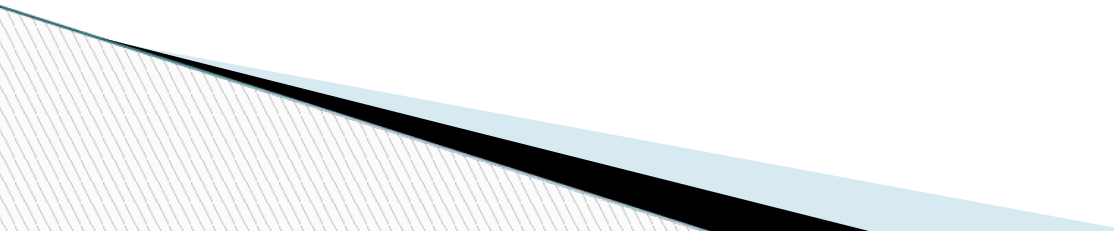
Milk and milk products, nuts and oilseeds, eggs and flesh foods – 8-10% fat.

Cereals, pulses, fruits have fats in minute amount. But since we consume them quite a lot, they do supply substantial amount of oil.

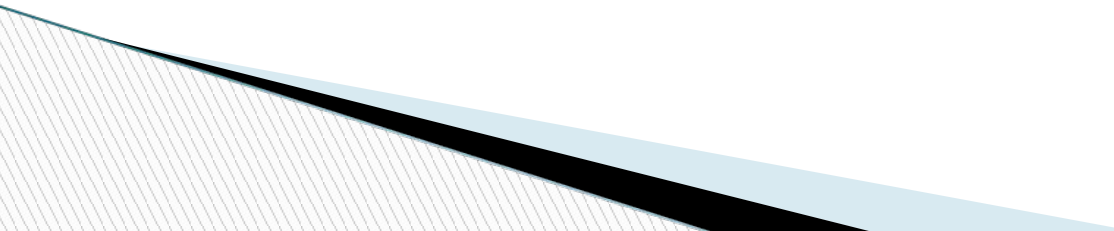
FUNCTIONS:

- Source of energy: Each gm of fat provides 9 Kcal. Excess fat stored as adipose tissue.**
 - Satiety Value: remain longer in stomach and take more time to digest.**
 - Insulation and Padding through being stored as adipose tissue. Keeps body warm and protects organs.**
 - Source of essential fatty acids.**
 - Carrier of fat soluble vitamins and aid in their absorption as well by our body.**
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Digestion, Absorption and Utilization

- Fats are chiefly digested in small intestine, pancreatic enzyme breaks them into glycerol and fatty acids aided by the action of bile.**
 - Glycerol and Fatty acids then move into the intestinal cells, from intestinal cells to lymph vessels, to heart and then blood circulation. Blood carries them to adipose tissue or to cells where utilized for energy.**
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Cholesterol

- ❑ **Present in Animal foods. Not in plant foods. It plays many imp. functions:**
 - ❑ **It is the structural component of membranes of body cells.**
 - ❑ **It's breakdown in liver produces bile salts.**
 - ❑ **Necessary for synthesis of many hormones**
 - ❑ **Extra cholesterol can be harmful and lead to heart disease.**
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THANK YOU

