

Block 2

Basic Concepts in Nutrition

By: Prof. Rekha Sharma Sen

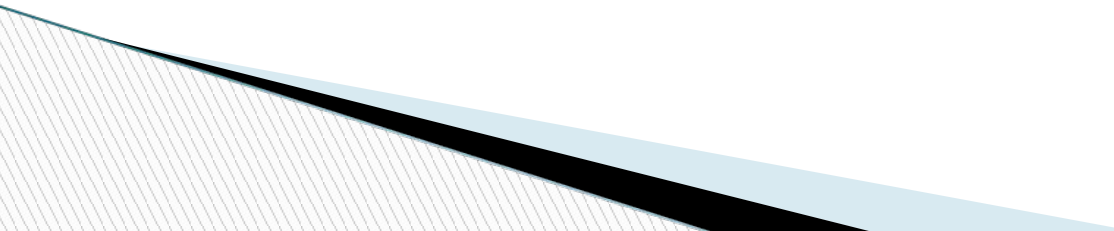


Unit 6
The Micronutrients-1

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Objectives

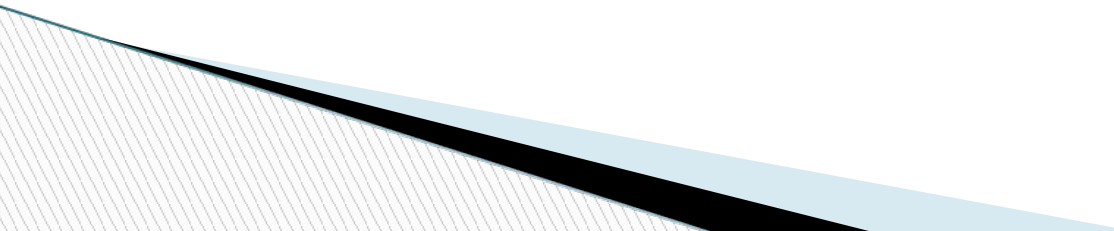
- **Differentiate between fat-soluble and water-soluble vitamins**
 - **Identify the food sources of each vitamin**
 - **State the important functions of each vitamin in the body**
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Fat Soluble Vitamins

- **Vitamin A,D,E and K – present in the fat in the food; excess amount gets stored in body. Remain dissolved in the fats and would be absorbed only after the fats are digested.**
- **Vitamin A or retinol – only in animal foods; Milk, butter, ghee, eggs, fish, liver.**
- **Plant foods contain yellow or orange pigment called carotenoid which gets converted into retinol. It is precursor of Vit A. Yellow and orange colour of fruits and vegetables due to it.**

- ❑ **Mango, papaya, carrot, pumpkin rich in beta carotene. Green leafy vegetables also contain carotenoid pigments however their presence is masked due to the presence of another pigment called chlorophyll.**
- ❑ **Conversion of carotene to retinol is not very efficient – so you need to consume enough plant food to fulfil Vit A needs.**

Functions Of Vitamin A

- ❑ **Maintaining normal vision**
 - ❑ **Supporting growth of skeleton and soft tissue – bones may not grow to full length.**
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- ❑ **Protecting against disease – keeps skin, lining of organs, lining of eyes moist. Lack of Vit A causes dryness and cracks in inner walls of intestine and lungs leading to infection.**

2. Vitamin D – Sunshine vitamin;

Food sources – animal origin – eggs, liver, butter, fish liver oil; not in plant food

Functions – makes bones strong and healthy; helps in mineralization of bones – increases absorption and deposition of Calcium and phosphorous

3. Vitamin E – in all foodstuffs; plant foods better sources. Vegetable oils like groundnut, soya, cottonseed and safflower. Whole grain cereals, dark leafy vegetables, pulses, nuts and oilseeds. Animal foods – not so good source except egg yolk, butter, liver

Functions – prevents destruction of Vit A and C, fatty acids in body and food.

4. Vitamin K – Plant foods – GLV; animal foods – egg yolk, milk and organ meats like liver. Can be manufactured in body in small intestine.

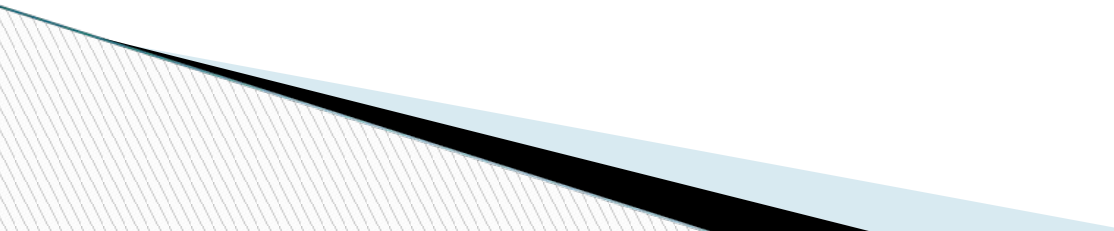
Functions – clotting of blood – anti bleeding vitamin. Helps in formation of a protein called prothrombin which, in turn, is essential for blood clotting.

Water Soluble Vitamins

- **Vit C , B complex; cannot be stored in body; pass out in urine; destroyed by cooking; sprouting and fermentation of plant foods increases their content**

B Complex Vitamins – Thiamine – B1, Riboflavin- B2, Niacin, Folic Acid and Vit B₁₂ occur together; help in metabolism of fats, carbohydrates and proteins.

- **Food Sources: Animal and plant foods, except fats, oils and sugar**

- ❑ **Vit C – fresh food vitamin - citrus foods, GLV, guava, amla, tomatoes etc. Helps in healing of wounds, overcoming injury and infection; aids iron absorption; protects Vit A and some fatty acids from break down.**
 - ❑ **Processing of cereals and pulses alter content of vitamins. Polishing of rice and refining of wheat causes heavy loss of thiamine and other B vitamins.**
 - ❑ **Sprouting and Fermentation: increases content of B-complex vitamins and Vitamin C in whole grain cereals and pulses.**
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THANK YOU

