

VITAMINS

4 Credits (Th)

Objectives:

This course will enable the students to:

1. Gain in-depth knowledge of the physiological and metabolic role of vitamins and their role in human nutrition.
2. Understand the basis of human nutritional requirements and recommendations through the life cycle and translate the knowledge into practical guidelines for dietary needs.
3. Be familiar with the recent advances in nutrition and apply this knowledge in planning for public health programmes.
4. Understand the pharmacological actions of various vitamins and their implications.

Contents:

For each of the vitamins, the following will be discussed:

- ❖ Historical background
- ❖ Structure and chemistry
- ❖ Food sources
- ❖ Metabolism (digestion, absorption, transport, storage and elimination), Bioavailability and factors affecting bioavailability.
- ❖ Biochemical and physiological functions
- ❖ Assessment of status
- ❖ Interaction with other nutrients, regulation of gene expression (wherever applicable)
- ❖ Pharmacological and therapeutic effects
- ❖ Requirements, methods for estimating requirements and recommended daily allowance.
- ❖ Deficiency, overload and toxicity.

| Module No | Topics | No of credits |
|------------------|--|----------------------|
| 1 | Fat Soluble Vitamins Vitamin A and Beta Carotene Vitamin D Vitamin E Vitamin K | 1.5 |
| 2 | Water Soluble Vitamins Ascorbic acid Thiamin Riboflavin Niacin Pyridoxine Folic acid Vitamin B ₁₂ Biotin | 2 |
| 3 | Quasi vitamins (in brief) Choline/Betaine Myo Inositol Carnitine Bioflavinoids | 0.5 |

References:

1. Annual Reviews of Nutrition. Annual Review Inc, California, USA.
2. Shils, M.E.; Olson, J.; Shike, M. and Roos, C. (1998): Modern Nutrition in Health and Disease. 9th edition. Williams and Williams. A Beverly Co. London.
3. Bodwell, C.E. and Erdman, J.W. (1988) Nutrient Interactions. Marcel Dekker Inc. New York
4. World Reviews of Nutrition and Dietetics.
5. WHO Technical Report Series.
6. Indian Council of Medical Research. Recommended Dietary Intakes for Indians - Latest Recommendations.
7. Indian Council of Medical Research. Nutritive Value of Indian Foods - Latest Publication.
8. Berdanier, C.D. and Haargrove, J.L.(ed) (1996): Nutrients and Gene Expression: Clinical Aspects. Boca Raton, FL CRC Press.
9. Baeurle, P.A. (ed) (1994) Inducible Gene Expression. Part I: Environmental Stresses and Nutrients. Boston: Birkhauser.
10. Chandra, R.K. (ed) (1992): Nutrition and Immunology. ARTS Biomedical. St. John's Newfoundland.

Journals:

1. Nutrition Reviews
2. Journal of Nutrition
3. American Journal of Clinical Nutrition
4. British Journal of Nutrition
5. European Journal of Clinical Nutrition
6. International Journal of Vitamin and Nutrition Research
7. International Journal of Food Science and Nutrition
8. Nutrition Research
9. Annals of Nutrition & Metabolism