

DIETARY SUPPLEMENTS AND NUTRACEUTICALS

L : 3 T : 1

Credit point: 4
No. of hours: 50

Scope:

This subject covers foundational knowledge of dietary supplements and nutraceuticals which is important for understanding the significance and requirements of dietary supplements among different population segments. It deals with the role of nutraceuticals in various pathophysiological conditions and also explains the effect of antioxidants in free radical induced disease conditions. Various food laws and Pharmacopoeial specifications for dietary supplements and nutraceuticals will be discussed under this subject.

Objective: (Imparting Transferable and life Skills to practice as a nutritional expert)

This module aim to provide an understanding of the concepts behind the applications of dietary supplements and nutraceuticals. By the end of the course, students should be able to:

- Comprehend the need of dietary supplements by the different group of people (age, gender, species, geographical differences etc.) to maintain healthy life.
- Appreciate the components in dietary supplements and their application.
- Understand the outcome of deficiencies in dietary supplements.
- Appreciate the regulatory and commercial aspects of dietary supplements.

UNIT I

10 hours

- a) Introduction to **Nutraceuticals and Dietary supplements**. Classification of Nutraceuticals.
- b) Role of Dietary supplements and Nutraceuticals in disease prevention and treatment and various disorders that can be prevented or cured by nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.
- c) Nutrition education in community, nutrition and ageing, maternal and child nutrition, Geriatric health maintenance.
- d) Name of marker compounds, source, chemical composition, therapeutic uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds

UNIT II

16 hours

Phytochemicals as nutraceuticals: Occurrence and characteristic features, chemical composition, therapeutic uses and health benefits of following:-

- a) Carotenoids- α and β -Carotene, Lycopene, Xanthophylls, leutin
- b) Sulfides: Diallyl sulfides, Allyltrisulfide.
- c) Polyphenolics: Resveratrol
- d) Flavonoids- Rutin, Naringin, Quercetin, Anthocyanidins, catechins, Flavones
- e) Phyto-estrogens : Isoflavones, daidzein, Geobustan, lignans
- f) Tocopherols
- g) Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats, wheat bran, rice bran, sea foods, coffee, tea and the like.
- h) Dietary fibres and complex carbohydrates as functional food ingredients..

UNIT III

16 hours

- a) **Free radicals and natural antioxidants** in human health : Free radicals, reactive oxygen species, generation of free radicals in cells. Free radicals involvement in various disorders. Free radicals theory of ageing.
- b) Antioxidants: Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defence,

Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E, α -Lipoic acid, melatonin, Synthetic antioxidants: Butylatedhydroxy Toluene, Butylatedhydroxy Anisole.

UNIT IV

08 hours

- a) Various factors such as environmental, processing technique and storage conditions affecting the potential of nutraceuticals.
- b) Pharmacopoeial specifications for dietary supplements and nutraceuticals.

References:

1. K.T Agusti and P.Faizal, Role of dietary fibres and neutraceuticals in preventing diseases BSPublication.
2. Robert E.C. Wildman, Handbook of Nutraceuticals and Functional Foods, 2006, Third Edition (Modern Nutrition).
3. Labuza, T.P. Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in Essentials of Functional Foods, 2000, M.K. Sachmidl and T.P. Labuza eds. Aspen Press.
4. James F.Balch and Phyllis A.Balch, Prescription for Nutritional Healing, 1997, 2nd Edn., Avery Publishing Group, NY.