

BP812ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS (Theory)

45 Hours

Course Content:

Unit-I

10 Hours

Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.

Public health nutrition, maternal and child nutrition. Nutrition and ageing, nutrition education in community.

Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soybean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds.

Unit-II

10 Hours

Phytochemicals as nutraceuticals: Occurrence and characteristic features (chemical nature medicinal benefits) of following:

Carotenoids: α and β -Carotene, Lycopene, Xanthophylls, leutin.

Sulfides: Diallyl sulfides, Allyl trisulfide.

Polyphenolics: Resveratrol.

Flavonoids: Rutin, Naringin, Quercetin, Anthocyanidins, catechins, Flavones.

Prebiotics/Probiotics: Fructo-oligosaccharides, Lacto bacillum.

Phyto estrogens: Isoflavones, daidzein, Geeststin, lignans.

Tocopherols.

Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats, wheat bran, rice bran, sea foods, coffee, tea and the like.

Unit-III

10 Hours

Introduction to free radicals: Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

Dietary fibres and complex carbohydrates as functional food ingredients.

Unit-IV

08 Hours

Free radicals in Diabetes mellitus, Inflammation, Ischemic reperfusion injury, Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free- radicals theory of ageing.

Antioxidants: Endogenous antioxidants– enzymatic and non-enzymatic antioxidant defence, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione, Vitamin C, Vitamin E, α -Lipoic acid, melatonin. Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

Functional foods for chronic disease prevention.

Unit-V**07 Hours**

Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

Regulatory Aspects: FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration of foods.

Pharmacopeial Specifications for dietary supplements and nutraceuticals.

Recommended Books (Latest editions)

- Role of Dietary Fibers and Nutraceuticals in Preventing Diseases by K.T. Agusti and P. Faizal: BS Publication.
- Advanced Nutritional Therapies by Cooper. K.A., Thomas Nelson, Inc., USA.
- The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd., (1988).
- Prescription for Nutritional Healing by James F. Balch and Phyllis A. Balch 2nd Ed., Avery Publishing Group, NY (1997).
- Functional Foods by G. Gibson and C. Williams Editors 2000, Woodhead Publ. Co. London.
- Functional Foods by Goldberg, I., 1994. Chapman and Hall, New York.
- Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in Essentials of Functional Foods by M.K. Sachmidl and T.P. Labuza eds. Aspen Press.
- Handbook of Nutraceuticals and Functional Foods, Third Edition (Modern Nutrition).
- Modern Nutrition in Health and Disease by Shils, M.E., Olson, J.A., Shike, M. 1994, Eighth edition. Lea and Febiger.
- Food Science by Potter N. Norman and J.H. Hotchkiss, CBS Publishers & Distributors Pvt. Ltd., New Delhi.
- Essentials of Food Process Engineering by Chandra Gopala Rao, BS Publications, Hyderabad.
- Food Chemistry and Nutrition - A Comprehensive Treatise by S. Sumathi, BS Publications, Hyderabad.