FUNCTIONAL FOODS, BIODYNAMIC PRINCIPLES AND NUTRACEUTICALS

4 Credits (Th)

Objectives:

This course is designed to enable students to:

1. Gain knowledge about functional foods, biodynamic principles and nutraceuticals
2. Have thorough understanding about the health effects
3. Be familiar with applications in industry.

Contents:

Module No	**Topics and Details**	**No of Credits**
1.	**Introduction:** Definition, history, classification – Type of classification (Probiotics, probiotics and synbiotics; Nutrient vs. Non-nutrient; according to target organ; according to source or origin). Metabolism of xenobiotics (review) **Probiotics** a. Taxonomy and important features of probiotic micro-organisms. b. Health effects of probiotics including mechanism of action. c. Probiotics in various foods: fermented milk products, non-milk products etc. d. Quality Assurance of probiotics and safety. **Prebiotics** Unit 1. Definition, chemistry, sources, metabolism and bioavailability, effect of processing, physiological effects, effects on human health and potential applications in risk reduction of diseases, perspective for food applications for the following: • Non-digestible carbohydrates/oligosaccharides: • Dietary fibre • Resistant starch • Gums	**1**
2	**Potential health benefits of the following biodynamic principles:** Definition, chemistry, sources, metabolism and bioavailability, effect of processing, physiological effects, effects on human health and potential applications in risk reduction of diseases, perspective for food	**2**

	applications for: • Polyphenols: Flavonoids, catechins, isoflavones, tannins Curcumin, Resveratrol • Phytoesterogens/ Isoflavones • Phytosterols • Glucosinolates • Pigments : Lycopene, Carotenoids • Organo sulphur compounds • Other components – Phytates, Protease inhibitors, saponins, Amylase inhibitors, haemagglutinins	
3.	**Non- nutrient effect of specific nutrients :** Proteins, Peptides and nucleotides, Conjugated linoleic acid and n-3 fatty acids, Vitamins and Minerals. **Active biodynamic principles in spices, condiments and other plant materials and their evidence based effects**	**1**

References:

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2. Yurawecz, M.P., M.M. Mossoba, J.K.G. Kramer, M.W. Pariza and G.J. Nelson eds (1999) Advances in Conjugated Linoleic Acid Research, Vol. 1. AOCS Press, Champaign.
3. Wildman, R.E.C. ed. (2000) Handbook of Nutraceuticals and Functional Foods, CRC Press, Boca Raton.
4. Fuller, R. ed. (1992) Probiotics the scientific basis, London: Chapman and Hall, New York.
5. Fuller, R. ed. (1997) Probiotics Applications and Practical Aspects, London: Chapman and Hall, New York.
6. Salminen, S. A. Von Wright (eds) (1998): Lactic acid bacteria: microbiology and functional aspects, 2nd edition, Marcell Dekker Inc. New York.
7. Goldberg, I. Ed (1994): Functional Foods: Designer Foods, Pharma Foods, Nutraceuticals, Chapman & Hall, New York.
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9. Gibson, G., Williams, C. eds (2000): Functional Foods. Woodhead Publishing Ltd. U.K.

10. Young, J. (1996): Functional Foods: Strategies for successful product development. FT Management Report Pearson Professional Publishers, London.

11. Frei, B. (1994): Natural antioxidants in human health and disease. Academic Press, San Diego.

12. Tannock, G.W. (1999): Probiotics: A critical review, Horizon Scientic Press, UK.