EXTENDED LECTURE OUTLINE

SFND 314 **NUTRACEUTICALS AND HEALTH FOODS** **(2+0)**

Sl. No	Course Content	Hours
	Nutraceuticals and functional food definition: • Introduction on Nutraceuticals, Definition and Importance • Introduction on functional food, Definition and Importance • Nutraceutical product, Ingredients of nutraceuticals **Relationship between nutraceuticals, foods and medicines** • Food and nutraceutical • Nutraceuticals and Herbal medicines	3
	Synonymous terms-functional foods, health foods, bioactive compounds and phytochemicals • Difference between nutraceuticals and functional foods • Concept and definitions of Health foods, Bioactive compounds, Phytochemicals **Classification and importance of functional foods** • Different definitions of functional foods • History of functional foods • Benefits of functional foods • Types of functional foods • Classification of Functional foods • Grouping of functional foods • Advantages and Disadvantages of functional foods • Prebiotics- Definition, Sources and its classification, Natural sources • Probiotics- Benefits, different types of probiotics: Sources of probiotics • Synbiotics- Health benefits • Nutrient density and energy density • Non nutrient dense foods • Benefits of nutrient dense foods	3

	Basis of claims for a compound as a nutraceutical, regulatory issues including CODEX, FSSAI Regulation. Regulatory and legal aspects of functional foods • How to regulate marketing of nutraceuticals in India? • PFA Act 1954 • Regulation of nutraceuticals in other countries • Evolution of marketing environment for functional foods and nutraceuticals • Marketing issues for nutraceuticals and functional foods • Potential product positioning	4
	Classification of nutraceutical substances based on food sources and based on mechanism of action and based on chemical nature. • Classification of nutraceuticals on the basis of food source • Classification on the basis of mechanism of action • Classification on the basis on chemical nature	01
	Nutrition claims by FSSAI, Regulatory issues for nutraceuticals including national and International standards • Health related claims • National and International standards for regulatory issues labeling **Global markets and trends** • Nutraceuticals and functional foods market in India and at global level • Motivators of nutraceuticals and functional foods market • Status of Indian nutraceuticals market • The future of nutraceuticals and functional foods • Seven step procedure for bringing or introducing nutraceuticals and functional foods to market • Challenges in development of nutraceuticals and functional foodsNational and	04

	International standards for regulatory issues labeling	
	Potential health benefits of major nutraceuticals, omega-3, lycopene, isoflavonoids, prebiotics and probiotics, glucosamine, phytosterols etc, • Prebiotics- Definition, Sources and its classification, Natural sources • Probiotics- Benefits, different types of probiotics: Sources of probiotics • Synbiotics- Health benefits • Postbiotics • Anioxidants • Dietary fibre • Omega 3 fatty acids • Lycopene • Isoflavonoids • glucosamine • phytosterols	04
	Metabolism, bioavailability and pharmacokinetics of nutraceuticals Impact of thermal and non-thermal processing on the bioactivity of nutraceuticals and functional ingredients in foods	02
	Concept of angiogenesis, nutraceuticals for joint health, cardiovascular diseases, cancer, diabetes, obesity, eye health, cholesterol management, mental health, immune enhancement, age related muscular degeneration, endurance performance and mood disorders. • Nutraceuticals for mental health: Acetyl-L-Carnitine, Phosphatidylserine, DocosaHexaenoic Acid (DHA), Soy Isoflavones, Treatments for Depression Synergism, Beneficial Interactions and Combination Products • Nutraceutical remedies for Arthritis: Fish oil, Olive oil, Methionine, Avocado Capsaicin, Turmeric, Bromelain • Nutraceutical remedies for circulatory system: Sterols and Stanols,Phenols,Tocotrienols, Calciferol,Pantathine, Fish oil, Fruits, Vegetables, Nuts and legumes, Whole grains, Soy proteins, Dark chocolates	07

	• Nutraceutical remedies for Hypoglycemia: Nutraceutical: New Weapon for Holistic Treatment: Aleovera, Jamun, Ginseng,Pumpkin, Onion • Nutraceutical remedies for nephrological disorders: Nutraceuticals and Chronic Kidney Diseases (CKD), Probiotics and Chronic Kidney Diseases (CKD) • Nutraceutical remedies for liver disorders: N-Acetyl Cysteine (NAC), Glutathione, Milk Thistle Extract, Licorice Root Extract, Selenium, L-Carnitine, Polyphenols, Probiotic Treatment • Nutraceutical remedies for Osteoporosis: Endocrine factors , Risk factors, Nutraceuticals for Bone – Melatonin, Polyunsaturated Fatty Acids, Phytoestrogens • Nutraceutical Remedies in Psoriasis: Symptoms and Types of Psoriasis, Alevera in Psoriasis • Nutraceutical Remedies in Ulcers: Types of ulcers: Foods that can help Ulcers • Nutraceuticals for cardiovascular diseases • Nutraceuticals against Alzheimer's disease • Nutraceuticals for Diabetes • Nutraceuticals in Parkinson's disease • Nutraceuticals in Hypertension • Nutraceuticals in Obesity • Nutraceuticals with Anti-inflammatory activities • Nutraceuticals in Cancer • Nutraceuticals in immune enhancement, • Nutraceuticals in age related muscular degeneration, • Nutraceuticals in endurance performance • Nutraceuticals in mood disorders	
	Clinical testing of nutraceuticals, and health foods- interaction of prescribed drugs and nutraceuticals • Mechanics of Prescribed Drug and Nutraceutical Interactions • High-Risk Interactions in Clinical Practice • Analytical techniques for estimation of nutraceuticals • Nutraceuticals- Quality, stability, and shelf life : Effect of temperature, Moisture,	03

	Oxygen, Ingredients on stability and shelf life	
	Nutraceuticals and functional foods-therapeutic use, safety and toxicity • <u>Nutraceutical supplements from plant sources:</u> • Spirulina and Kelp • Caffeine • Green Tea • Wheat grass • Lecithin • Mushroom extract • Chlorophyll • Garcinia Cambogia • Aleovera • Oats • Soy • Flax seed • Tomatoes • Spices • Cruciferous Vegetables • Cranberry • Wine and Grapes • Bee products: Honey, Bee pollen, Royal Jelly • Nutraceutical sources from animal sources: Fish, Marine sources, Dairy products	05
	Nutrigenomics- an introduction and its relation to nutraceuticals • Formulating "Precision" Supplements • Overcoming Genetic Mutations	01

	• Validating Clinical Efficacy • Managing and Preventing Chronic Disease	
	Current research in functional foods • Biotechnology in the Product Development of Nutraceuticals • Nanotechnology for Enhancing the Bioavailability and Delivery of • Nutraceuticals • Spray Drying for the Production of Nutraceutical Ingredients	02
	Total	**39**

REFERENCES

1. Robert EC. 2013. Handbook of Nutraceuticals and Functional Foods. 2nd Ed. Wildman. CRC Press
2. Rotime E. Aluko. 2012. Functional Foods and Nutraceuticals. Springer Publ.
3. Saarela, M. 2011. Functional Foods. 2nd Eds. Elsiever Publ.

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