

**MANGALORE**



**UNIVERSITY**

**DEPARTMENT OF MICROBIOLOGY**

**MSc Microbiology**

**MBS- 505: Pharmacognosy & Pharmacology**

40h

**OBJECTIVES:**

1. To prospect various plant based drugs
2. Utilization of various solvents and extraction procedures
3. Comparison of known herbal products with unknown products
4. Importance of patents

**COURSE OUTCOME**

CO1: Natural products importance

CO2: Herbal extraction procedure, traditional and modern age utilization for different ailments

CO3: Understanding patenting procedures of herbal extracts

CO4: Traditional usage of different Indian herbs and their products

**Unit I**

Good Agricultural and Harvesting Practices, Commercial cultivation, post-harvest care, processing technology and utilization of medicinal and aromatic plants. A brief account on Phytochemical and Pharmacological aspects and uses of medicinal plants. Study of biosynthetic pathway of Atropine, Morphine Cardiac glycosides, Terpenes and Flavonoids. Definition of Functional foods and Nutraceuticals. Classification of Nutraceuticals. Medicinal uses and health benefits of Nutraceuticals / Functional foods - Spirulina, Soya bean, Garlic, Turmeric, Tea and Coffee. Photochemicals as Nutraceuticals: uses in pharmacy, medicinal and health benefits - Carotenoids,  $\alpha$  and  $\beta$  Carotene, Lycopene, Xanthophyll and Flavonoids. Vegetable Bitters: Definition; bitter principles, actions and therapeutics. A brief account of natural products derived from Marine source with special reference to Cardiovascular, anti-cancer, anti-viral, anti-microbial anti-parasitic, anticoagulant and anti-inflammatory agents.

**Unit II**

HERBAL EXTRACTS: Types of extracts; Extraction methods such as Maceration, Percolation, Super critical fluid extraction, Distillation Methods; Methods for drying of extracts. Selection and purification of solvents for extraction. Ointment bases, Suppository bases and Hardening agents: Lanolin, Beeswax, Cocoa Butter, Hard paraffin, Petroleum jelly. As Flavours and Perfumers: Cardamom oil, Vanilla, Lemon oil, Orange oil, Sandal wood oil. Natural sweeteners: Definition of Nutritive and Non-nutritive sweeteners with examples. Sweetness potency. Herbal drugs industry: International Scenario. Cultivation of medicinal and aromatic plants. Names of different companies manufacturing different herbal extracts, standardized extracts with the concentration of marker compounds, active principles and claims regarding their uses.

### Unit III

Patent laws, proposed amendments as applicable to herbal/natural products and processes; important points to be kept in mind while drafting and filing a patent. Herbal Cosmetics: General method of preparation and evaluation of Herbal Cosmetics such as Skin care products. A brief account of Herb extracts or Herbal products of cosmetic importance such as Aloe vera, Neem, Henna, Acacia concinna pods, Citrus aurantium peel, Liquorice, Sandal wood, Olive oil, Wheat germ oil, Almond oil. Herbal products intended for treatment of GIT, CVS, Respiratory systems, CNS. Examples of Disorders of a) GIT – Diabetes, Liver, Constipation, Diarrhoea, Dysentery. B) CVS – Hypertension, Angina)RS– Bronchitis, Asthma, Tussived)CNS–Pain, Fever, Anxiety Convulsions

e) Musculo-Skeletal – Rheumatism, Cramps, f) Skin – Leucoderma g) GUS- Oedema, Urinary calculus, Leucorrhoea Dysmenorrhoea.

### Unit IV

Industrial and Research aspects of Pharmacognosy. Alternative systems of medicine such as Ayurveda, Unani, Siddha, Homeopathy as a source of information regarding natural drugs. Examples of various plants/plant parts/plant products and their form for treatment of different ailments. A brief account of some of the technologies developed by different research institutes and companies of both national and international status like CIMAP, RRL, CDRI, NBRI, CSIR. National centre for development of natural products(NCDNP).