

Course Title: Basics of Herbal Drug Technology

Credits: 2-0-0

Course objectives: The objective of the course is to make the students understand the use of plants as a source of herbal drugs from cultivation to final drug product, WHO and ICH guidelines for the evaluation of herbal drugs, herbal cosmetics, natural sweeteners, nutraceuticals, and appreciate patenting of herbal products will also be highlighted

Course outcomes:

On successful completion of this course, the students should be able to:

- 1) develop conceptual skills about traditional Indian medicinal system, herbal medicines, their processing, storage and marketing.
- 2) gain knowledge about developing commercial enterprises of herbal medicines
- 3) learn the basic tools and techniques for propagation and phytochemical analysis of medicinal plants.
- 4) gain knowledge of the latest guidelines issued by the regulating authorities for manufacturing herbal drugs.

Syllabus

Unit 1: Raw material for herbal drugs

Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation Source of Herbs Selection, identification and authentication of herbal materials Processing of herbal raw material. Good agricultural practices in the cultivation of medicinal plants, including Organic farming.

Phytochemistry - active principles and methods of their testing - identification and utilisation of the medicinal herbs, *Catharanthus roseus* (cardiotonic), *Withania somnifera* (drugs acting on the nervous system), *Clerodendron phlomoides* (anti-rheumatic) and *Centella asiatica* (memory booster).

Unit 2: Evaluation and regulation of herbal drugs

WHO & ICH guidelines for assessing herbal drugs Stability testing of herbal drugs. Regulations in India (ASU DTAB, ASU DCC).

Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

Unit 3: Herbal Industry and Good manufacturing of herbal drugs

Herbal drugs industry: Present scope and future prospects. A brief account of plant-based industries and institutions involved in work on medicinal and aromatic plants in India. Components of GMP (Schedule - T) and its objectives.

Infrastructural requirements, working space, storage area, machinery and types of equipment, standard operating procedures, health and hygiene, documentation and records

Suggested readings:

- 1) Chopra, R.N., Nayar S.L. and Chopra, I.C. (1956). Glossary of Indian Medicinal Plants, C.S.I.R., New Delhi.

- 2) Arber, A. (1999). Herbal plants and Drugs. Mangal Deep Publications.
- 3) Sivarajan V.V. and Balachandran I. (1994). Ayurvedic drugs and their plant source Oxford IBH publishing Co.
- 4) Miller, L. and Miller, B. (1998). Ayurveda and Aromatherapy. Banarsidass, Delhi.
- 5) Green, A. (2000). Principles of Ayurveda, Thomsons, London.
- 6) Kokate, C.K. (1999). Pharmacognosy, Nirali Prakashan.
- 7) Textbook of Pharmacognosy by Trease & Evans.
- 8) Textbook of Pharmacognosy by Tyler, Brady & Robber.
- 9) Pharmacognosy by Kokate, Purohit and Gokhale
- 10) Essential of Pharmacognosy by Dr.S.H Ansari 5. Pharmacognosy & Phytochemistry by V.D.Rangari
- 11) Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in Indian Medicine & Homeopathy).
- 12) Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.

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