

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm
SEMESTER: V

Subject Name: Pharmacognosy-III
Subject Code: 2250006

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	Theory		Practical	
				External	Internal	External	Internal
3	0	3	6	80	20	80	20

Theory

Sr No	Course Contents	Total Hrs
1	Glycosides: Definition, classification, Physico-chemical properties, general methods for isolation, biological sources, agronomy (cultivation, collection), commercial varieties, chemical constituents, substitutes, adulterants, uses, diagnostic macroscopic and microscopic features and specific chemical tests of following drugs: a) Saponins: Liquorice, Ginseng, Dioscorea, Arjun, Aritha, Achyranthus, Brahmi, Gokhru, Methi, Satavari, Dhamaso, Gymnema, Sarsaparilla, senega b) Cardioactive Sterols: Digitalis, Squill, Strophanthus, Thevetia, Nerium c) Anthraquinone cathartics: Aloe, Senna, Rhubarb, Cascara, <i>Cassia fistula</i> , <i>Cassia tora</i> , Majith d) Bitter glycosides: Gentian, Picrorrhiza, Chirata, Kalmegh, Quassia e) Coumarins: Psoralea, Ajmoda, Bhangro, Calophyllum f) Cyanogenetic glycosides: Almond, Linseed, Prunus g) Isothiocyante glycosides: Mustard, Black mustard h) Flavonoids: <i>Ruta graveolens</i> , Butea, Bhilama i) i. Others: Salix	35
2	Plant tissue culture: Introduction, basic requirements, types of culture, nutritional requirements, laboratory requirements and applications	10

Practical – 22500P6

- General methods for isolation and chemical tests of different glycoside containing drugs.
- Study of Morphology, Microscopy and TLC of crude drugs: (T.S., Powder and TLC of underlined drugs):
 - Anthraquinone:** Majith, Senna, Aloe, Rhubarb, *Cassia fistula*, *Cassia tora*
 - Cardioactive Sterols:** Digitalis (Powder), Squill, Thevetia, Nerium (leaf)

- c. **Saponins glycosides:** Liquorice, Achyranthus, Satavar, Ginseng, Dhamaso, Brahmi, Methi, Dioscorea, Sarsaparilla, senega
 - d. **Bitter glycosides:** Gentian, Chirata, Kalmegh, Quassia
 - e. **Coumarins:** Psoralea, Ajmoda, Bhangro
 - f. **Cyanogenetic and Isothiocyanate glycosides:** Almond, Linseed, Mustard
3. Study of Morphology and Chemical test for following drugs: Bhilama, Palash.
 4. Introduction to basic laboratory requirements, maintenance of plant tissue culture and production of callus culture.
 5. Estimation of sennosides from senna.
 6. Estimation of aloin from aloes.
 7. Isolation of Andrographolide from Kalmegh.

References Books:

1. Cultivation and Utilization of Medicinal Plants, Atal C. K. and Kapur B. M., RRL Jammu, 1st Edition, 1989.
2. Supplement to Cultivation and Utilization of Medicinal Plants, Handa, S.S. and Kaul, M.K., 1996. RRL, CSIR Publication, Jammu Tawi.
3. A Text book of Pharmacognosy: Shah C. S., Quadry J. S., B. S. Shah Prakashan, Ahmadabad. 15th Edition, 2009.
4. Pharmacognosy: Kokate C. K., Purohit A. P., Gokhale S. B., Nirali Prakashan Pune, 42nd edition, 2008.
5. Textbook of Pharmacognosy: Wallis T. E., CBS Publishers and Distributors, New Delhi, 5th Edition, reprinted, 2009.
6. Trease and Evans Pharmacognosy. 16th Edition, William Charles Evans, W. Saunders, Edinburg, London, New York, Philadelphia, St. Louis Sydney Toronto 2009.
7. Natural Products, Vol I & II, by Agrawal O. P., Goel Publishing House, Meerut, 28th Edition, 2004.
8. Comprehensive Biotechnology, 'The Principles, application and regulation of biotechnology in Industry, agriculture and Medicine Vol. 1-4 Alan T, Howard Dalton and Murray Mao-Young.
9. An introduction to Plant Tissue Culture Kalyan Kumar De, New Central Book Agency (P) Ltd., Calcutta
10. Plant Tissue Culture, Sharma Rajni, Campus Books International, 1st Edition, 2007.
11. Chemistry of Natural products. Bhat SV, Nagasampagi BA, Meenakshi S. Narosa Publishing house, New Delhi, 2005.
12. Medicinal plants glycosides- Sims. Toronto.
13. Natural Products as Medicinal Agents, Ed. Beal J. L. and Reinhard E., Hippocratos, Verlag, Stuttgart; 1982
14. Natural products, Ikan R., Academic Press, California, 1st Edition, 2005.
15. Pharmacognosy and Pharmacobiotechnology , Ashutosh Kar, 2nd Edition, New Age International Pvt. Ltd.; New Delhi, 2007.
16. Pharmacognosy and Pharmacobiotechnology. Robbers J. E, Marilyn K. Speedie, Varro E. Tyler, Baltimore: Williams & Wilkins, 1996; a Wavery Company, USA.
17. Pharmacognosy: Phytochemistry Medicinal Plants , Jean Bruneton, 2nd Edition, Intercept Publications, Ltd., TEC & DOC Paris, 1999.

- 18.** The Organic Constituents of Higher Plants. Their Chemistry and Interrelationships. Trevor Robinson, Burges Publishing Company, Minneapolis, USA, 1963.
- 19.** Practical Pharmacognosy, Technique and Experiment C. K. Kokate and S. B. Gokhale, Nirali Prakashan, Pune, 8th edition, 2005.
- 20.** The Wealth of India (Raw Material & Industrial Product), Published by Council of Scientific Industrial Research, New Delhi, 1st and 2nd Edition, 2005, 2nd (1950-2014)
- 21.** Indian Medicinal Plants by Kirtikar and Basu, 1st Edition, International Book Distributors, Dehradun, 1999.
- 22.** Compendium of Indian Medicinal Plant Vol. 1 to 6, by Rastogi Ram P., Mehrotra B. N., CDRI & NISCOM, 1st Edition, New Delhi, 1998.
- 23.** Review on Indian Medicinal Plants, Vol I to XI (2004 to 2014) Editor: Gupta AK & Tundon Neeraj. By: Indian Council of Medicinal Research (ICMR), New Delhi.
- 24.** Powdered Vegetable Drugs Jackson B. P. & Snewden D. W.
- 25.** Chanhani .M .G & Pillai A. P.G, Microscopic profile of powdered drugs used in Indian system of medicine, Volume I, Bark drugs 2005, Institute of Ayurvedic Medicinal Plant Science, Gujarat Ayurved University, Jamnagar.
- 26.** Chanhani .M .G & Pillai A. P.G, "Microscopic profile of powdered drugs used in Indian systems of Medicine, Leaf Drugs, Vol 2, 2007, Institute of P.G Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar.
- 27.** Chanhani .M .G & Pillai A. P.G, " Microscopic profile of Drugs used in Indian system of Medicine, Seed drugs, Volume- 3, part- 1,2011; Publisher: Prof Malati G Chauhan, P.G T- S.F C cell, I.P. G T. & R.A, Gujarat Ayurved University, Jamnagar.