**3.5 Pharmacognosy-I**

1. Introduction, development, present status and future scope of pharmacognosy, study of various systems of classification of crude drugs.
2. Systematic study of crude drugs including English, Indian Synonyms, Biological and Geographical sources (by macroscopy, sensory and microscopic of the drugs underlined) chemical constituents, chemical and microchemical tests, uses, adulterstion and evaluation of the following drugs;
   (i) Drugs containing carbohydrates: Starch, Honey, Guargum, Sodium alginate, Agar, Linseed, Ispaghula, Bael, Acacia, Tragacanth, Sterculia, Katira, Pectin and Lactose.
   (ii) Fixed oils, Fats and Waxes: Olive oil, Caster oil, Sesame oil, Neem oil, Arachis oil, Chalmoogra oil, Theobroma, Lard, Suet, Shark liver oil, Lanolin, Beeswax, Spermaceti, Jujuba wax.
   (iii) Drugs containing Volatile Oil: Mentha, Coriander, Cinnamon, Cassia, Lemon Peel, Lemongrass, Citronella, Caraway, Cumin, Dill, Spearmint, Clove, Fennel, Nutmeg, Acorus calamus, Eucalyptus, Chenopodium, Cardamom, Valerian, Pyrethum.
   (iv) Drugs containing Resin: Benzoin, Tolu Balsam, Colophony, Asafoetida, Jalap, Kaladana, Ginger, Colocynth, Capsicum, Turmeric, Cannabis, Podophyllum.
   (v) Drugs containing Glycosides: Senna, Aloe, Rhubarb, Cascara, Digitalis, Strophanthus, scilla, Thevetia, Dioscorea, Glycyrrhiza, Psorelea, Gentian, Picorrhiza, Chirata, Quassia, Catechu, Myrobalan, Ammi majus, Quillaia.
   (vi) Drugs containing alkaloids: Lobelia, Nicotiana, Belladonna, Hyoscyamus, Datura, Withania, Coca, Cinchona, Ipecac, Curare, Opium, Nux vomica, Ergot, Rauwolfia, Catharanthus, Aconite, Veratrum, Ephedra, colchicum.
   (vii) Miscellaneous Drugs: Gelatin, Jatamansi, Malefern and Sausera.

3. Study of biological sources, Chemical tests, microscopic features of commercial fibres and earths used as surgical dressing and filtering media:
   (i) Cellulose and its derivatives: Cotton wool, Oxidised cotton, Methyl Cellulose, Carboxy methyl cellulose, cellulose wadding.
   (ii) Vegetable, Animal and Synthetic fibres: Jute, Wool, Silk, Nylon, Terylene, Polythene.
   (iii) Inorganic Pharmaceutical Aids: Talc, Diatomite, Asbestos, Fuller's earths, Bentonite.

4. Evaluation: Identity, Purity and quality of the drug plants by organoleptic, microscopic, physical, chemical and biological methods.
5. Variability of drug constituents due to exogenous and endogenous factors, like altitude, temperature, rainfall, light, propagation by seeds, vegetative means, selection, mutation, hybridization and polyploidy.
6. Collection of medicinal plants: Effect of various factors like reason, time, age of plants etc drying of plants, hazards like infestation with spores of microorganisms. Drug deterioration by factors like moisture etc.
7. Chromatography: Various chromatographic methods covering column, paper, thin layer and gas chromatography.

**PRACTICALS**

1. Identification by morphological and sensory character of drugs mentioned in theory.
2. Detailed study under microscopy of whole and powdered drugs and chemical tests of drugs underlined in theory.
3. Identification of unorganized drugs included in theory by chemical tests.
4. Study of fibres by macroscopical, microscopical and chemical tests.
5. Practical exercise on chromatography:
   (i) TLC of alkaloidal extracts of the following drugs- ergot, datura, cinchona, opium, ipecac, nux vomica and Rauwolfia.
   (ii) TLC of volatile oils of Dill, Lemongrass, Mentha and Eucalyptus.
6. Quantitative microscopy- Determination of stomatal index, palisade ratio, veinislet number etc.

**Books Recommended:**

1. Pharmacognosy ($8^{th}$ ed.) 1981, V.E. Tylor, L.R. Brady and J.E. Robbers, Pub. Learned Febiger, Philadelphia, USA.
2. Pharmacognosy ($12^{th}$ ed.) GE Trease and W.C. Evans Pub. Baillers Tindall, London.
3. Surgical dressing and wound healing Ed. K.J. Harkiss, Bradford University Press, UK.
4. Cultivation and utilization of Aromatic plants EDA tal and B.N. Kapoor Pub. Council of Scientific Industrial Research (CSIR), New Delhi.
5. Powdered Vegetable drugs, BP Jackson and DW Snewden, Pub. J.A. Churchill.
6. Thin Layer Chromatography, Egon Stahl Pub. Springer Verlag.
7. Quantitative paper and Thin Layer Chromatography, E.J. Shellard Pub. Academic Press.
8. The organic constituents of higher plants, Trevor Bargress Pub. Co.
9. Pharmacognosy T.E. Wallis, Pub. J.A. Churchill.