

Experiment Name / No.:

Examination - 2018

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Pharmacology - IV

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### 13) Role of medicinal plants in national economy.

Among 2,50,000 species of plants occurring in the world, approximately 35,000 - 70,000 (14% - 28%) species were used at one time or the other in the long time in the long human history for medicinal purpose. India's flora and fauna wealth of known 1,27,000 species include 49,000 species of plants, algae and fungi. Out of 15,000 - 17,000 flowering plants occurring in India, 6,000 - 7,500 species are used for medicinal purpose in different traditional systems of medicine such as Ayurveda, Siddha, Unani, Homeopathy, Herbo-mineral, folklore etc. The global trade in plant based drugs are estimated to be US \$ 32 - 43 billion and the use of plant based prescription and over-the-counter drugs is increasing. India has approximately 1,000,000 practitioners of traditional system of medicine, 10,000 licensed pharmaceutical manufacturing plant based drugs. Medicinal herb's worth was estimated at Rs 2,300 crore which is expected to increase to Rs 5,000 crore.

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Teacher's Signature:

### a) Chemical constituent of tobacco

- Contains several pyridine alkaloids (4-6%) of which nicotine (0.6-9%),
- other basic components are nicotine, nicotine, (-)-nornicotine, d-nornicotine, piperidine, pyrrolidine.
- Contains 25-50% carbohydrates, mainly sucrose, starch, pectin, cellulose.

### Medicinal use of tobacco.

- sedative, narcotic, emetic, antiseptic.
- widely used for smoking, as agricultural insecticide.
- Useful in nasal polypi, nasal catarrh, headache, chronic giddiness & fainting.

### b) Chemical constituents of Areca.

- Contains a number of alkaloid (0.1-0.5%) of a piperidine series such as arecoline, arecaine, guanine, arecaidine, guanine, arecolidine.
- In addition to alkaloids, Areca nuts contains fat (14%), amorphous red tannin (15%) and  $\alpha$ -catechin.

### Medicinal uses of Areca

- Used as anthelmintic, and vermifuge for dogs.
- It has aphrodisiac action & useful in urinary disorders.
- A nervine tonic and emmenagogue.

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c) Datura

- chemical constitute.

- contain 0.2-0.5% alkaloids
- Main alkaloids are hyoscyamine & hyoscyne
- Contains protein albumin.
- D. metel var. fastulosa contains higher alkaloid of total alkaloids
- Medicinal use of Datura.

- Used as narcotic, anti-spasmodic & spodyne.
- Relieve the spasm of the bronchioles in asthma.
- Leaves may be made into cigarettes to relieve asthma.

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### 3) Macroscopy of Liquorice

- Drug occurs in peeled or unpeeled stolons and roots, length 5-30cm, diameter 1-2cm, cylindrical, branched or unbranched. Unpeeled drug is longitudinally wrinkled, contains dark, reddish-brown bark. The peeled drug has yellow colour. Fracture is fibrous, odour faint and typical taste, sweet.

### Microscopy of Liquorice

Several layers with tabular cells, outer layers are filled with reddish brown contents and inner few are colourless.

- Phellogen - indistinct
- Phellogen - 3-5 layered, parenchymatous, wide zone with numerous concentrically arranged bundles of phloem fibres. Radially the fibre bundles alternated with soft phloem elements

### h) Macroscopy of Ephedra

- stems of Ephedra, are slender pieces, containing numerous ridges, nodes & internodes and fine longitudinal ridges on the outer surface. Distance of internodes are nearly 3-6cm and diameter of node is 1-2mm. leaves are small, connate at the base about 1mm in length.

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## Microscopy of Ephedra

- Surface of the stem is ribbed and, therefore, the outline of the stem in transverse section is not circular.

- Transverse section of stem shows a single-layered epidermis composed of quadrangular cells with thick-walled cuticle and papillae.

- Vertical rows of sunken stomata present along the sides of the furrows between the ridges.

- Cortex is of thin-walled, radially elongated, and loosely arranged chlorenchymatous cells containing abundant chloroplasts and intercellular space.

- In each vascular bundle, phloem is external and xylem is internal with cambium in between them.

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## Diastase

→ Bio. Source — amylolytic enzymes present in saliva i.e., salivary gland diastase or Amylin

### → Preparation & Properties

→ thermolabile.

→ sensitive to temp. more than 45°C

→ pH 6-7.

### → Uses

→ used as digestant.

→ production of predigested foods.

## Papain

→ Bio Source — derived from latex of unripe fruit of tropical melon tree. family — Caricaceae

→ Preparation — collected in aluminium tray  
 — Pot. metabisulphite is added.  
 — passes through sieves & takes at 55-60°C

→ Uses — clarification of beverages

→ as meat tenderiser

→ used as anti-inflammatory agent.

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Pepsin

source → Glandular layer of fresh stomach of hog, sus scrofa.

Preparation → minced stomach linings are digested with HCl acid, followed by clarification, controlled evaporation, dialysis and conc. of digested solution

Uses → Used as digestive aid for starch, proteins and fats.

Pancreatin

source - Pancreas of hog sus scrofa.

Identification - amorphous powder

Characteristic taste & odour.

Soluble in water

insoluble in alcohol.

Uses → to treat pancreatic deficiency like pancreatitis

→ Used for preparing peptonized or undigested food.

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5) Nux-vomica.

- Biological source - *Strychnos nux-vomica* Linn  
- contain 1-2% of strychnine.

Family - Loganiaceae.

Geog. source - found in forest of Sri Lanka, Malabar coast, Australia.

Plant Habitat & Morphology -

- Plant is a small tree, 12 m in height.
- Fruit collected in a berry.
- Epicarp is separated and seeds are obtained and washed to remove adherent pulp.
- Small embryos with 2 cordate cotyledons embedded in endosperm.

\* Chemical const. - 1.8-5.3% alkaloids.

- Main alkaloids are strychnine and brucine.

\* Uses - Strychnine is used as circulatory stimulant and bitter tonic.

- *Nuxvomica* inc. the tone of intestine.

Solanum

- Family - Solanaceae.

*Solanum* species show a wide range of growing habits, such as annual & perennials, vines, shrubs, and small trees. Many formerly independent genera, like *Lycopersicon* and *Cyphomandra* are now included.

- Species called 'night shade' in N. America and Britain is *Solanum dulcamara*.

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The black nightshade (*S. nigrum*) is also generally considered poisonous

- Poisoning associated with certain species of *Solanum* are not uncommon and may be fatal.

Swati Kumar