

CHAPTER 5 (C)

Study of Crude Drugs - III

5.1. ANTIDYSENTERICS

5.1.1. Introduction

Antidysenterics are drugs used for treating dysentery (an inflammatory disorder of the lower intestinal tract). Dysentery is the result of bacterial or parasitic infection causing pain, fever, or diarrhoea.

5.1.2. Ipecacuanha

Roots of Ipecac are a powerful emetic agent used to induce vomiting in cases of poisoning. It is a flowering plant which is native to Brazil. Until recent times, it was still used in hospitals and homes for this purpose.

Synonyms

Ipecacuanha root and Radix ipecacuanha.

Biological Source

Ipecacuanha is the dried rhizomes and roots of *Cephaelis ipecacuanha* (Brotero) A. It should contain 2% or more of the ether-soluble alkaloids.

Family

Rubiaceae



Figure 5.1: *Cephaelis ipecacuanha*

5.1.2.1. Occurrence and Distribution

Ipecacuanha is native to Brazil. It is also cultivated in Malaysia. The origin of *C. acuminata* is the northern portions of Columbia. However, it is also grown in Panama and Nicaragua. In India, it is cultivated in the north-eastern regions.

5.1.2.2. Organoleptic Evaluation

The organoleptic features of ipecacuanha are:

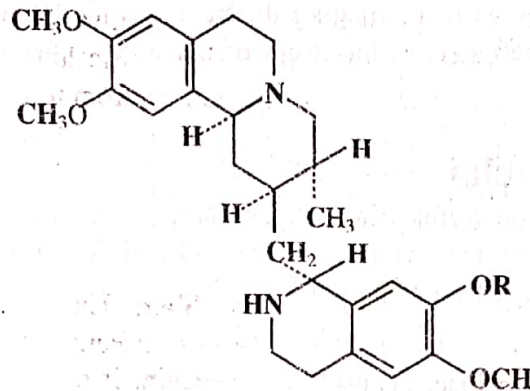
- 1) **Roots:** Annulated externally; outer surface is deep brick-red to a very dark brown in colour; the surface has rounded ridges which encircle the root completely; short fractures are present on the roots having thick greyish bark and small dense wood.
- 2) **Rhizomes:** Thinner bark.
- 3) **Stem:** Rhizomatous and rooting, or decumbent, or erect; not more than 18 inches long, woody, rounded, knotted, and marked with leaf scars; smooth and grey at the base; quadrangular, pubescent, and green above; simple or slightly branched.
- 4) **Leaves:** Few in number and crowded at the upper part of the stem, opposite, shortly stalked, large stipules, united at the base where several ovoid glands are present which are persistent; whitish; as long as the petiole; deeply cut into 4 subulate laciniae; blade is 2-4 inches or more long; oval shaped; acute or blunt at the apex; entire and more or less wavy on the margins; thick, with a few hairs on the edge; dark-green and nearly smooth above; somewhat pubescent; prominent veins beneath.

- 5) **Flowers:** Small, sessile, about 10-20 occur together in a dense head supported on a cylindrical, pubescent, purplish, axillary but apparently terminal peduncle; the peduncle is initially erect which later on bends downwards; flowers are surrounded by an involucre of 4 ovate, entire, downy, unequal bracts; a small acute pubescent bract accompanies each flower.

5.1.2.3. Chemical Constituents

Ipecacuanha has about 2-2.5% of alkaloids. The main alkaloids of ipecac present in the bark are:

Phenolic alkaloids	Cephaline	Dimethyl psychotrine
Non-phenolic alkaloids	Emetine(30-75%)	Psychotrine



Emetine R = CH₃
Cephaline R = H

Other than these alkaloids, ipecacuanha also contains calcium oxalate and starch granules. A glucosidal tannin, **ipecacuanhin** and a glycoside, **ipecoside** are the other constituents. The drug also has citric acid, malic acid, ipecamine, and resins.

5.1.2.4. Chemical Tests

0.5gm of the grounded drug is mixed with 20ml of hydrochloric acid and 5ml of water. This mixture is filtered and 0.01gm of potassium chlorate (or chloramine) is added to 2ml of filtrate. A yellow coloured solution is obtained. On standing for about 60 minutes, this yellow coloured solution slowly changes to red. This happens due to the presence of emetine.

5.1.2.5. Therapeutic Efficacy

The therapeutic uses of ipecacuanha are:

- 1) Ipecac syrup is used as an expectorant. Since it is well tolerated by children, it is used in whooping cough.
- 2) Emetine hydrochloride is used parentally for the treatment of amoebic dysentery.
- 3) Ipecac syrup is the most effective and dependable emetic for treating systemic poisoning.
- 4) Ipecac and opium powder (e.g., Dover's powder) are together used as a diaphoretic.
- 5) It stimulates secretion, thus, used as an expectorant for treating coughs.
- 6) Its active ingredients are used in many formulations for cold.
- 7) It also induces emesis. However, this must be attempted only in conscious and alert patients. The drug of choice to induce vomiting is syrup of ipecac.
- 8) It also has amoebicidal properties.