

7.2. COLLECTION AND PREPARATION OF CRUDE DRUGS

7.2.1. Introduction ⁽³⁾

Irrespective of the type of crude drug and area of collection, there cannot be two opinions that the drugs are collected suitably when they contain maximum concentration of active constituents. The advantage of existing environmental conditions is also taken into consideration while collecting the crude drugs.

After collection of the crude drugs, they are required to be processed prior to marketing. The reasons for preparation of drugs are to stabilise them in transport and storage and to ensure the absence of foreign organic matter and substitutes. Marketed preparation of crude drugs also takes care of pharmaceutical elegance. Generally, these methods include proper methods of collection, viz., **harvesting**, **drying**, and **garbling**. Sometimes coating and bleaching are also necessary for converting the drug into suitable form for the market.

Preservation of crude drugs needs sound knowledge of their physical and chemical properties. A good quality of the drugs can be maintained, if they are preserved properly. All the drugs should be preserved in well-closed containers. They should be stored in the premises which are water-proof, fire-proof and rodent-proof.

7.2.2. Ergot

Ergot of Rye is a fungal disease of wheat and rye caused by a fungus *Claviceps purpurea*. Grain of rye and wheat are replaced by a dark, purplish **sclerotium**. After winter, the sexual phase of the lifecycle of ergot starts from **sclerotium**. The fungus, *Claviceps purpurea* produces alkaloids known as **ergotamines**.

Lifecycle of *Claviceps purpurea* can be divided into the following **three stages**:

- 1) **Sphacelia or Honeydew or Asexual Stage:** The rye plant gets infected by the fungal spores in spring season when the flower blooms. These spores are carried by the wind or insects to the flowers where they accumulate at the base of the young ovary in the presence of moisture. Germination of fungal spores begins there forming filamentous hyphae which penetrate the ovary wall by enzymatic reactions. A white, soft mass named as **sphacelia** is formed over the ovary surface. At this stage, a yellowish, viscous and sweet liquid of reducing sugars is secreted known as **honeydew**. Small and oval-shaped conidiospores (asexual spore/s) come out from the hyphae ends and suspend on honeydew. Insects (like ants and weevils) are attracted towards the sweet taste of honeydew; they suck the sweet liquid and carry the conidiospores to spread the fungal infection in the rye plants.

- 2) **Sclerotium or Ascigerous or Sexual Stage:** In this stage, the hyphae develop further, penetrate the deeper parts, feed on ovarian tissues, and replace it by a dark purple, compact, and hard tissue known as **pseudoparenchyma**. This tissue forms the sclerotium or resting state or sexual stage of the fungus. In summer, size of sclerotium increases, projects towards the rye showing sphaelate remains at its apex. At this stage, ergot is collected either by hands or machines, and dried to remove moisture. Mature sclerotia are harvested after 6 weeks of inoculation either by hand or machines. Size and number of ergots produced on each spike of cereal by *C. purpurea* always differs.
- 3) **Ascospore Stage:** If ergot is not collected, it falls on the ground and in the next spring season produces stalked projections with globular heads known as **stromata**. On inner surface of the heads, many flask-shaped pockets are present known as **perithecia**. In every perithecium, many sacs (asci) with 8 thread-like **ascospores** are present. These thread like ascospores are carried by wind or insects to the flowers of rye (as described in the first stage) to complete the lifecycle of ergot.

Ascospores germinate on a nutritive medium to get conidiospore bearing cultures. The suspension of these **conidiospores** is used as a spray to infect rye plants for commercial purpose. Crop size depends on the conditions of weather. When sclerotia are fully developed and project from the spike, they are either collected from fields of rye or are removed from the grain by shifting. Size of the crop varies according to the weather conditions.

Figure 7.11 shows the complete life cycle of ergot:

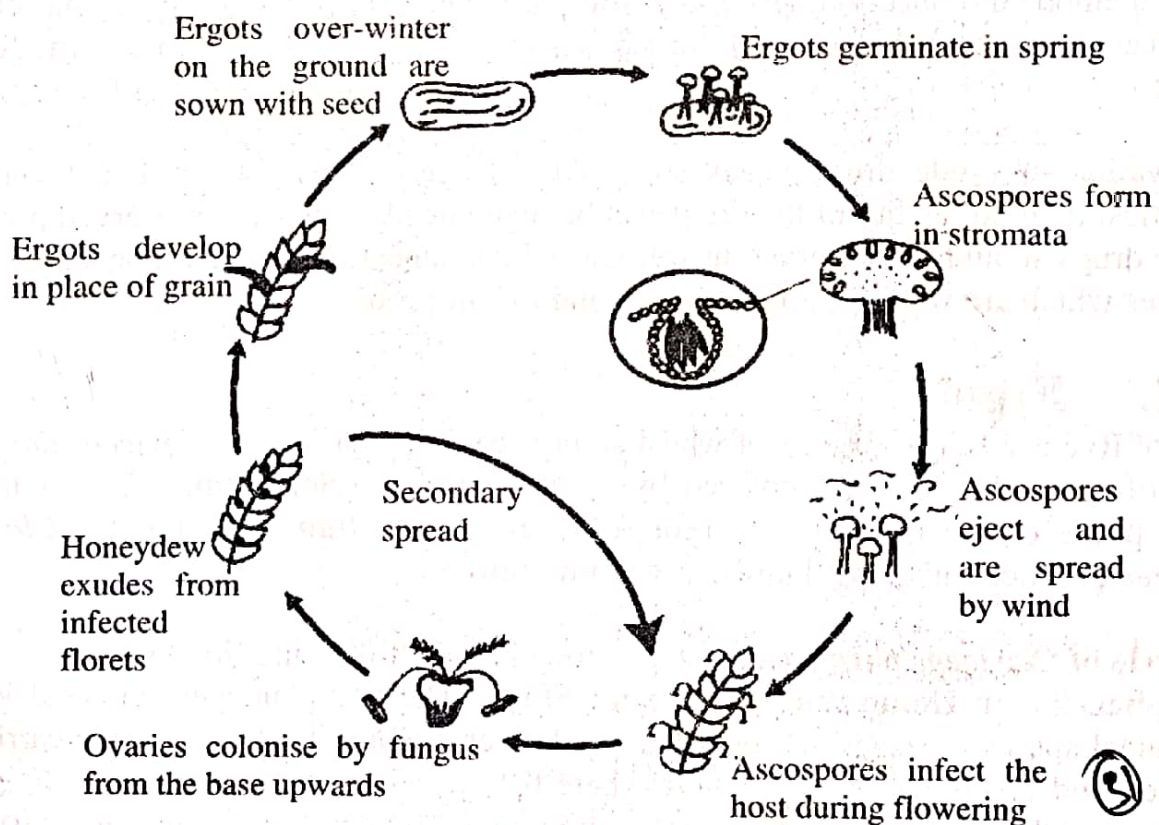


Figure 7.11: Life Cycle of Ergot