Diploma in Pharmacy 1st Year
Pharmacognosy Practical

To perform the gross anatomical study (transverse section) of Ajwain.

Aim:

To perform the gross anatomical study (transverse section) of Ajwain.

Reference :

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 63 - 66

Biological Sources:

Ajwain is the dried ripe seeds of Trachyspermum ammi (L.) Sprague,which belongs to Apiaceae family.

Materials and Apparatus Required

Ajwain, sharp razor, brush, dropper, needles, watch glass, microscopic slides, cover-slips, safranin, water, glycerine, and compound microscope.

Theory

- The small, oval-shaped, seed-like fruits of ajwain are pale brown schizocarps which look like the seeds of other plants in the family Apiacea like caraway, cumin, and fennel.
- They have a bitter and pungent flavour that is similar to anise and oregano.
- Because they contain thymol, they smell almost identical to thyme, but they are more aromatic and less delicate in flavour, as well as bitter and pungent.
- A dish's flavour is often dominated by a small number of fruits.

Microscopic Character

- Epicarp is made up of polygonal cells.
- At vascular strands in the mesocarpic region, reticulate and lignified parenchymas are seen.
- The endocarp is made up of narrow, elongated cells that are arranged in a parquetry pattern.
- The helical thickening of the tracheids may be seen.
- Aleurone grains and oil globules are found in polyhedral, thick-walled endosperm.
- The mericarp has six vittae, four on the dorsal side at the mesocarpic region below the secondary ridges and two on the commissural surface.
- Vittae are long, small cells with thin walls that are lined by an epithelium of small polygonal tubular cells.
- They have 10-15 distinct septa, transverse or curved septum.
- Epicarp is a single layer of tangentially elongated tubular cells.
- Mesocarp is a moderately thick-walled, rectangular to polygonal tangentially elongated cells with some vittae.
- Carpophores and vascular bundles are present as groups of thick-walled radically elongated cells.
- Integument is a barrel-shaped of tangentially elongated cells.
- Endosperm is made up of thin-walled cells filled with embryos, as well as small, circular oil globules made up of polygonal thin- yalled cells.
- Oil globules and groupings of endosperm cells can be seen in the powder microscopic.

Procedure

- 2-3cm long pieces of seed should be taken.
- The seed should be placed between thumb and first finger of left hand.
- The razor should be taken in the right hand with the edge of the blade facing inward and handled at right angle to it.
- The top portion of the seed should be dipped in water.
- Then the seed should be cut in transverse sections as soon as possible in a watch glass containing water.
- The thinnest part of the seed should be selected with the help of a delicate brush.
- Thin section of the seed should be transferred into clean watch glass with water.
- Few drops of safranin stain should be applied in the watch glass with water.
- The seed should be left for 3-5 minutes.
- Stain should be removed and cleaned with water if required.
- The thinnest part should be placed in the center of the slide.
- A drop of glycerine should be applied over the seed.
- It should be covered with a coverslip with the help of needle.
- The seed should be observed under a compound microscope after staining and mounting.

Result:

The gross anatomical study of Ajwain was performed and determined.