EXPERIMENT NO. 4

AIM To identify different parts of an embryo of a dicot seed (Pea, gram or red kidney bean).

REQUIREMENTS Dicot seeds (Pea, gram or red kidney bean), needle Petri plate, blotting paper, dissecting microscope.

PROCEDURE

1. Keep the bean seed on wet cotton on the Petri plate for one day.
2. With the help of a needle, remove the seed coat and observe it on wet blotting paper.
3. On removing the seed coat embryo of the seed is seen. Gently open the cotyledons and observe attachment of the embryo axis to the cotyledons.
4. Remove the embryo axis from the cotyledons.
5. Display the cotyledons and embryo axis on the blotting paper.

Observation

1. Concave side red kidney bean seed is darker with a whitish sear called hilum. It is the point where the stalk of the funicle of the seed was attached. Hilum may be called a belly button of the seed.
2. Micropile is a pore on one end of hilum; water enters the seed through this pore using seed germination. This pore can be seen on pressing a soaked seed when a drop of water or air is found ooze out of it.
3. The seed is covered by a thick outer seed coat called testa and a thin inner transparent tegmen.
4. An embryo has two large cotyledons and one embryo axis or tigellum. Cotyledons are curved and have become large due to the storage of food. These become the first leave of the plant.
5. The upper end of the embryo axis is plumule (future shoot). It has two small folded leaves.
6. The lower end of the embryo axis which project beyond the cotyledons is the radical (future root).
7. The part of the embryo axis between plumule and the point of attachment is called epicotyls.
8. The part of the embryo axis between radical and point of attachment is called the hypocotyl.

PRECAUTIONS

1. Seeds must be soaked in water before observing in parts.
2. The seed coat should be removed gently.

PRACTICAL BASED QUESTIONS

1. What is the role of cotyledons?
2. (i) Name the single cell formed by the fusion of male and female gametes in angiosperm.
   (ii)Where does an embryo develop from a zygote?
3. What are the conditions required for the germination of seed?
4. What are the components of an embryo?
5. What are albuminous and non-albuminous seeds? Give an example.