ANTHOCEROS Sp.- CLASSIFICATION, , REPRODUCTION, SPOROPHYTE

A. CLASSIFICATION

Division – Bryophyta

Class – Anthocerotopsida

Order – Anthocerotales

Family – Anthocerotaceae

Genus – Anthoceros

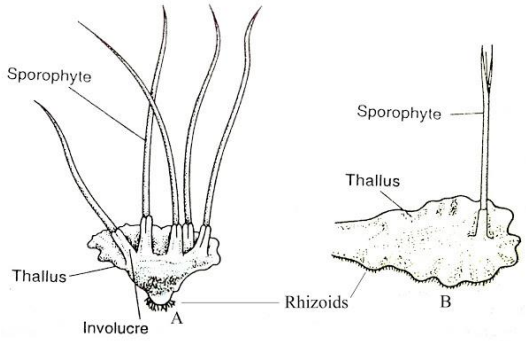

Fig: Anthoceros sp. External morphology.
(A) Thallus of *A. erectus*, bearing sporophyte;
(B) A. *laebis*, bearing dehiscent sporophyte

The genus *Anthoceros* comprises about 200 species and is widely distributed all over the world. The species of *Anthoceros* is cosmopolitan, but occurs mainly in temperate and trophical regions. All the species are found to grow in moist and shady places on ditches, rocks, etc. About 25 species of *Anthoceros* have been reported from India. Of these the common species are – *A. erectus, A. himalayansis, A. khandalensis*, *A. crispulus*, etc.

E.SPOROPHYTIC PHASE:

Zygote is the first cell of the sporophyte. By repeated segmentation it develops into an elongated **embryo**. The later by further cell division, cell differentiation and continued growth rapidly grows into an elongated, spindle-shaped structure with a bulbous base, which is known as the **sporangium** or **sporophyte**.

The sporophyte of *Anthoceros* is differentiated into two regions – **foot** and **capsule.** Each sporophyte is surrounded at its base by a tubular **involucre**.

(a) Foot: - It is a rounded bulbous structure deeply embedded in the tissue of the thallus. By means of foot *Anthoceros* sporophyte is attached is well anchored upon and attached to the thallus. The foot mainly consists of a mass of parenchymatous cells.

(b)Seta:- is absent in *Anthoceros* sporophyte, instead a zone of meristematic is present, by the activity of which the capsule grows.

C. Capsule:- It forms the major and conspicuous part of the sporophyte. It is a long, slender, smooth, upright and cylindrical structure measuring about 2–3 cms in length. Internally, capsule is a complex structure and shows differentiation of tissues. (i) The

centre of the capsule is occupied by a sterile mass of tissue known as **columella**. The columella contains trachied-like cells and is usually 16-celled in cross section. (ii) Surrounding the columella thers is a cylinder of **sporogenous tissue** which is differentiated into alternative blocks of sterile branched *pseudoelaters* and *spore-tetrads* towards the apex. (iii) The uppermost layer consists of the **capsule wall**. It is multilayered consisting of 4 – 6 layers of cells. The outermost layer forms the *epidermis* with distinct *stomata*. Beneath the epidermis forms the parenchymatous *jacket cells* with intercellular spaces among them and contains chloroplasts.

In dry condition, when the capsule looses water, the tip of the capsule gradually shrivels and the capsule dehisces by splitting into two halves exposing spores, thereby shedding off of the spores by hygroscopic movement. Dispersal od the spores takes place by air current. Spores after liberation from the sporangium undergo a resting period of few weeks or months – then each germinates through germ tube and forms a new *Anthoceros* thallus.

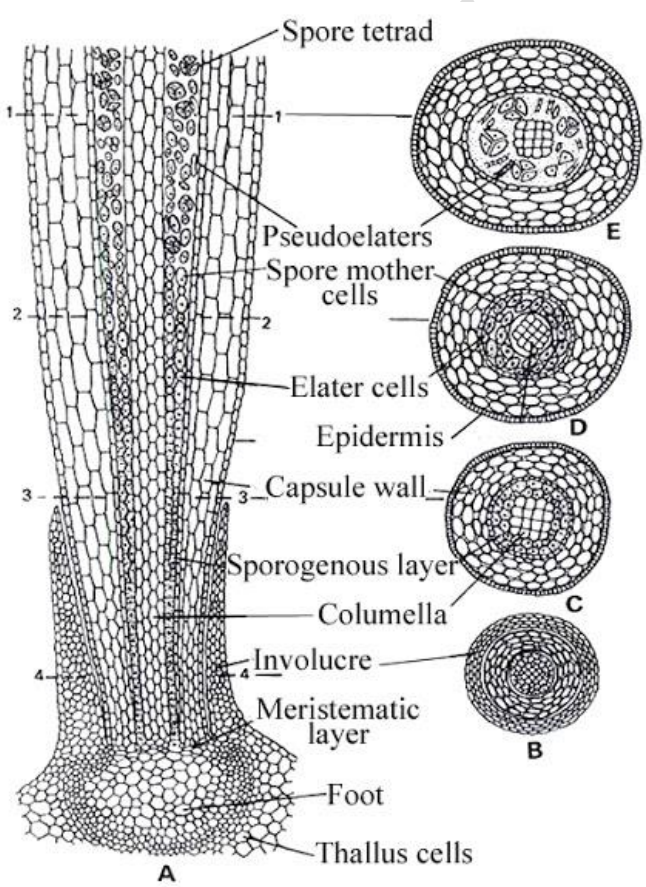

Fig: *Anthoceros*. (A) LS of sporangium; (B-E) Cross section of sporophyte