

Dr. Rachana Shalini  
Department of Botany  
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## **General account of Anthoceros(contd.):**

### **Sporophytic Phase of Anthoceros(contd.):**

#### **Capsule of Anthoceros:**

**Internal structure of capsule can be differentiated into following parts:**

#### **Columella:**

It is central sterile pan, extending nearly to its tip. It is endothecial in origin. In young sporophyte it consists of four vertical rows of cells but in mature sporophyte it is made up of 16 vertical rows of cells (4 x 4). In a transverse section these cells appear as a solid square (Fig. 8 D, E). It provides mechanical support, functions as water conducting tissue and also helps in dispersal of spores.

#### **Archegonium:**

It is present between the capsule wall and the columella. It extends from base to the top of the capsule. It originates from the inner layer of amphithecium. In young sporophyte it over arches the columella (a feature in contrast to liverworts).

In a few species of *Anthoceros* for e.g., *A. crenatifrons*, *A. hawaiiensis* and *A. erectus*, the archesporium may remain one cell in thickness throughout its further development.

However, in *A. pearsoni* and *A. himalayensis* it may become two layered thick a little above the base. In *A. hallii* it may even become two to four cells in thickness (Fig. 8 A, a-a). In upper part of the capsule it is differentiated into sporogenous tissue which produces spores and pseudo elaters.

Pseudo elaters may be unicellular or multicellular, branched or un-branched and may consists more or less elongated cells (Fig. 9 A-D). The spiral thickenings are absent (characteristic of *Anthoceros*) but in *A. physocladus* the cells have long and thick walls with extremely reduced lumen (Pande, 1960). In some species of *Anthoceros* their secondary walls possess helical thickenings (Proskauer, 1960).

### **Capsule wall:**

It consists of four to six layers of cells, of which the outermost layer is epidermis. The cells of the epidermis are vertically elongated and have deposit of cutin on their walls. The continuity of epidermis is broken by the presence of stomata. The stomata are oriented vertically with the axis of the sporogonium and are widely separated from each other.

Each stoma consists a pore surrounded by two guard cells. The cells of the inner layers have intercellular spaces and contain chloroplast. Thus, the sporogonium is partially self-sufficient to synthesize its own organic food but partially it depends on the gametophyte for the supply of water and mineral nutrients.