Morphology, Anatomy and Reproduction of Anthoceros
Taxonomic Position of *Anthoceros*

Class- Anthocerotopsida

Single order

**Anthocerotales**

Two families

Anthocerotaceae

Notothylaceae

Representative Genus

*Anthoceros*  
*Notothylus*
General features of Anthocerotopsida

• Forms an isolated evolutionary line
• Sometimes considered independent from Bryophytes and placed in division Anthocerophyta
• Called as ‘Hornworts’ due to horn like structure of sporophyte
• Commonly recognised genera includes
  Anthoceros, Megaceros, Nothothylus, Dendroceros
Anthoceros : Habitat & Distribution

- Cosmopolitan
- Mainly in temperate & tropical regions
- More than 200 species, 25 sp. Recorded from India.
- Mostly grows in moist shady places, sides of ditches or in moist hollows among rocks
- Few species grow on decaying wood.
- Three common Indian species- A. erectus, A. crispulus, A. himalayensis
Anthoceros: Morphology

Dorsal surface

Ventral surface

Rhizoids (smooth walled)

Thallus showing tubers
External features

- Thallus (gametophyte)- small, dark green, dorsiventral, prostrate, branched or lobed
- No midrib, spongy due to presence of underlying mucilaginous ducts
- Dorsal surface varies from species to species
  - Smooth- *A. laevis*
  - Velvety- *A. crispulus*
  - Rough- *A. fusiformis*
- Smooth walled rhizoid on ventral surface
- Rounded bluish green thickened area on ventral surface- *Nostoc* colonies
Internal structure

Vertical Transverse Section - Diagrammatic

Vertical Transverse Section - Cellular
Internal Structure

• Simple, without cellular differentiation
• 1-6 chloroplast per cell, oval or discoid with lamellar structure like higher plants
• Chloroplast contains pyrenoids, like green algae, *Isoetes* and *Selaginella*
• *Nostoc* gain entry from slime pores
Vegetative Reproduction
Apical Growth

- By single apical cell or group of cells
- Campbell(1918)- difficult to determine
- Leitgeb(1879)- by group of cells
- Mehra & Handoo(1953)- by group of cells in *A. erectus & A. himalayensis*
Development of Antheridium
Development of Archegonium
Morphology of Sporophyte
Detailed structure of Sporophyte
Development of Sporophyte
Structure of Sporophyte
Spore germination
Life cycle of Anthoceros