Hello students, I welcome you all for today's presentation.

Myself Dr. Mehtab Bukhari, professor of botany from Government, College of Arts, Science and Commerce, Quepem, Goa.

The program is Bachelor of Science for the students of First year BSc, subject botany , semester I, course code is BOC 101 and the course title is biodiversity- I which includes microbes, algae, fungi, and bryophytes.

The title of the unit is bryophytes, and the module name is anatomy of *Anthoceros*, gametophyte and sporophyte.

The outline of this module includes anatomy of *Anthoceros*.

Upon completion of this module students learn the anatomy of gametophyte and understand the anatomy of sporophyte of *Anthoceros*.

As given in the previous module the plant body is a gametophyte , it is thalloid, irregularly branched,

dark green in colour and dorsiventrally flattened. The rhizoids are seen on the ventral side, whereas sporophytes are seen projecting outward on the dorsal side of the thallus.

When we take the vertical section of thallus.

We see that the thallus is homogeneous. Internally it is made up of only one type of cells. The cells are all alike. It consists of parenchymatous tissues which are bounded by single layered upper and lower epidermis. Each cell has a distinct nucleus, large chloroplasts and paranoid body.

The lower epidermis cells give rise to simple smooth walled rhizoids which helps in attachment and absorption.

The mucilaginous cavities inhabits blue green algae which are present on the ventral side, which opens on the ventral side by minute opening known as slime pore.

The thallus is thickest in the middle and becomes thinner towards the margin.

Here is the diagram. We can see the upper epidermis , we can see the lower epidermis.

We can see the cells which are homogeneous internally and we can also see large cavities of mucilage cavities which are filled with blue green algae such as nostoc, and they open on the ventral side by an opening known as slime pore.

Here is the diagrammatic representation of *Anthoceros* thallus showing mucilage cavities, thallus tissue and rhizoids cells. Enlarged portion showing the cell wall, the chloroplasts and the pyrenoid body, and this is the *Nostoc* chamber enclosing *Nostoc* colonies or *Nostoc* filaments and opening on the ventral side known as the slime pore.

Coming to the sporophyte. When we take the vertical section of sporophyte of *Anthoceros* we see that the sporophyte is differentiated into a Basal bulbous portion known as foot region, and an elongated cylindrical vertical capsule. Connecting these two region is an intercalary meristematic zone which lies just above the foot and below the capsule region.

The capsule consists of three portions, capsule wall, sporogenous tissues and columella.

The capsule is long, greenish in colour and it is due to this photosynthetic nature of capsule which makes the sporophyte partly independent.

Coming to the foot region, it is made up of thin walled parenchymatous cells. The cells are irregular in the

center and regularly arranged towards the periphery. It helps in attachment and absorption.

Meristematic zone, which is intermediate zone connects the foot with the capsule and this zone continuously adds new cells to the tissues of the capsule.

The capsule, which forms a major part of the sporophyte is erect and cylindrical as seen in the diagram here.

It consists of three portions the capsule wall, which is 4 to 6 layered, the sporogenous tissues and a central sterile region known as Columella.

The wall of the capsule consists of parenchymatous cells arranged in four to six layer.

The outermost layer of the capsule wall is epidermis. The epidermal layer is interrupted by stomata. Just beneath the capsule wall lies a cylinder of sporogenous tissue that extends over the top of the columella like a dome it exhibits a series of cells from single layer archesporium at the base to well differentiated spores and elaters at the top.

The columella is a central region which is made up of 16 vertical rows of cells. The cells of columella are narrow and elongated and they have more or less uniformly thickened wall.

The columella provides mechanical support to the long, narrow and delicate capsule. It helps the spores to disperse and is also associated with the conduction of water.

These are the references which are used for preparing the content.

Thank you students.