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***Psilotum*: Systematic position, Salient features and Morphology**

Systematic Position:

Division: Pteridophyta
Class: Psilopsida
Order: Psilotales
Family: Psilotaceae
Genus: *Psilotum*

Salient Features of Psilotum:

- The sporophytes are dichotomously branched with an underground rhizome and upright branches.
- The upright branches are leafless.
- Rhizoids present instead of roots.
- Stem have a relatively simple vascular cylinder.
- The sporangia are borne in groups (trilocular) and form synangia.
- Spores produced are all alike (homosporous).
- The development of gametophyte is exosporic and form monoecious subterranean gametophyte.
- The development of embryo is exoscopic.

Distribution of Psilotum:

Though several species have been reported in Psilotum, all of them usually fall into two well defined species, viz., *P. nudum* (*P. triquertum*) and *P. flaccidum* (*P. complanatum*). The earlier reports of the existence of several species is probably due to the polymorphic nature of the sporophyte.

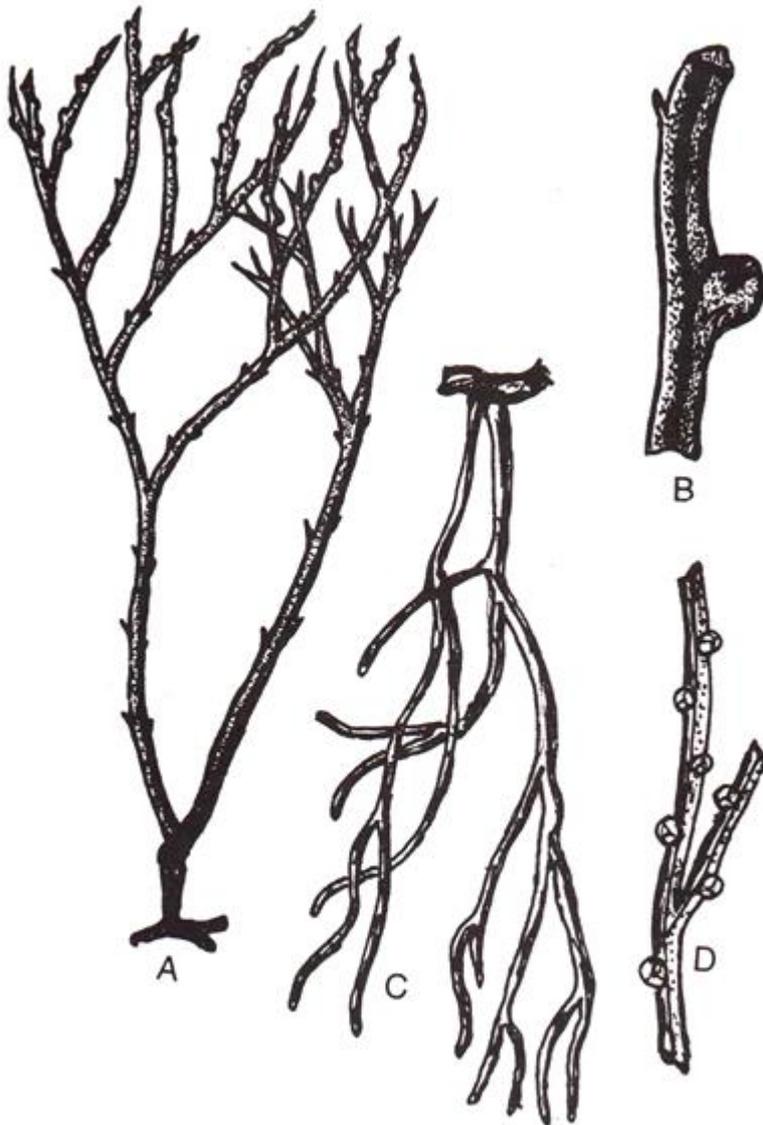


Fig. 19. *Psilotum* : Habit of *Psilotum nudum* (A) and a Part of the Shoot Bearing Synangia (B); Habit of *Psilotum flaccidum* (C) and a part of the Shoot bearing Synangia (D)

In their habitat they are either terrestrial or epiphytic. While *P. nudum* is predominantly terrestrial, *P. flaccidum* is mainly epiphytic growing in the humus packets of trees.

Sporophyte of Psilotum:

Morphology:

The plant body of *Psilotum* is differentiated into two parts viz., a horizontal underground rhizome and an erect aerial shoot. The rhizome is brownish in colour and dichotomously branched. There are no roots. The rhizome is studded with a number of long, fine, thread like rhizoids. According to Bierhorst (1954 or 1958), the branching of the rhizome is irregular.

Some of the branches of the rhizome grow up and constitute the erect (*P. nudum*) or pendulous (*P. flaccidum*) shoot system. The aerial shoots are 20-75 cm long and are usually ribbed and multi-angular. The ultimate branches however are triquertous.

While the above description holds good for *P. nudum*, in *P. flaccidum* the base of the aerial shoot is triquertous while the tips are flattened. Unlike the rhizome, the aerial shoots are regularly dichotomously branched and are deep green in colour indicating their photosynthetic activity.

Here and there on the aerial shoot are found a number of scales or appendages which are often called leaves. These are of two types viz., sterile and fertile.

The sterile ones are found all along the length of the aerial shoot while the fertile ones are generally restricted to the upper portions and bear in their axils a trilobed spore bearing structure which is often called a Synangium. The leaves whether fertile or sterile are devoid of any vasculature and could be regarded as only emergences.