

Fig. Marsilea: Attachment of sporocarp.  
 A. M. minuta B. M. polycarpa  
 C. M. quadrifolia

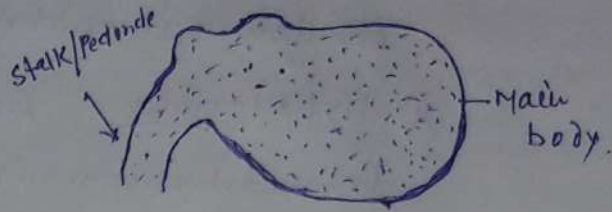


Fig. Marsilea: sporocarp.

It is made up of a short stalk called peduncle and the main body. The portion of peduncle attached to the body of sporocarp is called <sup>generally forms a ridge which</sup> ~~is called~~ <sup>called tubercles</sup> "Raphe". <sup>In some species it</sup> ~~is~~ terminates into two horns. These horns probably represent two reduced leaflets (Eames, 1936).

#### \* Internal structure of mature sporocarp:-

The sporocarp is a bivalved structure. It can be split open in the dorsiventral plane into two halves. The internal structure can be studied under following headings —

i) Sporocarp Wall:- It is hard, thick and highly resistant to mechanical injury. It is differentiated into an outer epidermis, a middle hypodermis, and an inner parenchymatous zone.

ii) Epidermis - It is made up of cuboidal cells

## On Line Study Material (e-content)

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Name of the College: S.S. College, Jabod

Date: 27.08.2020

Name of the Dept: Botany

Time: 11.00-12.00

Subject: Pteridophyta

Name of the Teacher: Dr.

S.S. Sharma

Topic: Marsilea

Class: B.Sc. Bot H - PI

Medium of Teaching: WhatsApp &  
College Website.

Biotech Sub: PI

### Marsilea: Reproduction

Plant body of Marsilea is a sporophyte which reproduces asexually both by vegetative means as well as by means of spores.

#### (A) Vegetative reproduction: -

In Marsilea vegetative reproduction takes place by.

• Tubers: - Tubers are small budlike structure that arises from the <sup>branch of</sup> rhizome. They contain reserve food and serve as perennating organs. They are capable of tiding over the adverse conditions. On the return of favourable conditions these tubers germinate and form new plants. Tuber formation has been observed in M. minuta, and M. hirsuta, M. quadrifolia etc.

#### (B) Formation of spores: -

Marsilea is homosporous i.e. two types of spores are produced. Microspores are produced in microsporangia and megaspores are produced in megasporangia. These sporangia are ~~produced~~ <sup>born</sup> in special type of spore producing organ.

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and is covered with a thick layer of cuticle. A large number of ~~stomata~~ sunken stomata are found in epidermis.

ii) Hypodermis :- Epidermis is followed by two layered hypodermis. The outer layer is made up of radially elongated palisade-like cells, which are compactly arranged. Intercellular spaces are absent. The inner layer is of thin walled parenchymatous cells.

iii) Inner Parenchymatous zone :- This layer is made up of parenchymatous tissue of variable thickness. At maturity these cells gelatinise and form a ring inside the sporocarp wall (-helps in dehiscence).

Detailed internal study of sporocarp can be done by cutting sections in 3 planes -

- (a) Vertical transverse section - VTS.
- (b) Vertical longitudinal section - VLS
- (c) Horizontal longitudinal section - HLS.

(a) Vertical transverse section (VTS) →

In VTS, the outline of sporocarp is oval. It shows the usual wall layers. The section may pass through the megasporangia of two rows of sori, or through the microsporangia. Each sorus has its own annulus.

The gelatinous ring appears in the form of dorsal (more prominent) and ventral mass. The dorsal bundle is clearly visible above the gelatinous mass. It gives two commissures that run downward and almost envelop the two sori. The placental vascular supply from the commissure bundle is also clear. The inducium is two layered and covers the sporangia towards inner side.

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Called as "Sporocarp".

\* Sporocarp of Marsilea :-

Sporocarp of Marsilea is flattened, spherical to ovoid, bean shaped asexual reproductive body. It is stalked and bisporangiate and formed when the water tends to dry. It's shape, size, content, length of stalk and attachment varies greatly in different species.

- Shape :- variable e.g. -
  - oval - M. coromandelina
  - bean shaped - M. minuta
  - dumbbell shaped - M. aegyptiaca
  - squarish or rectangular - M. rajasthanensis
- Size - 2x3 to 10x12 mm in M. coromandelina
- Number - Usually one sporocarp is found per petiole but in case of -
  - # M. polycarpa - large no. of sporocarps per petiole
  - # M. quadrifolia - the stalk is occasionally branched forming 2-3 sporocarp per petiole
- Attachment of sporocarp to petiole -
  - a) M. polycarpa - complex - pedicel directly attached to the petiole in linear sequence
  - b) M. quadrifolia - complex - pedicel <sup>one or</sup> more than one, connate and adnate to the petiole.
  - c) M. minuta - complex - pedicel one or more directly attached to the base of the petiole.

• External Structure :- Sporocarp of Marsilea is green and soft in young condition but at maturity it becomes ~~hardened~~ and brown in colour.