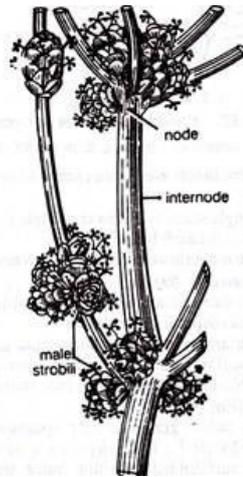
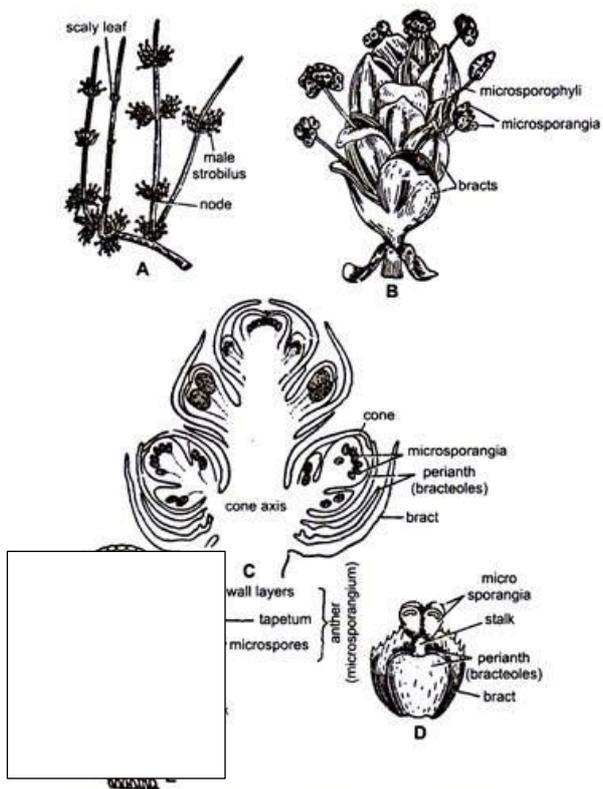


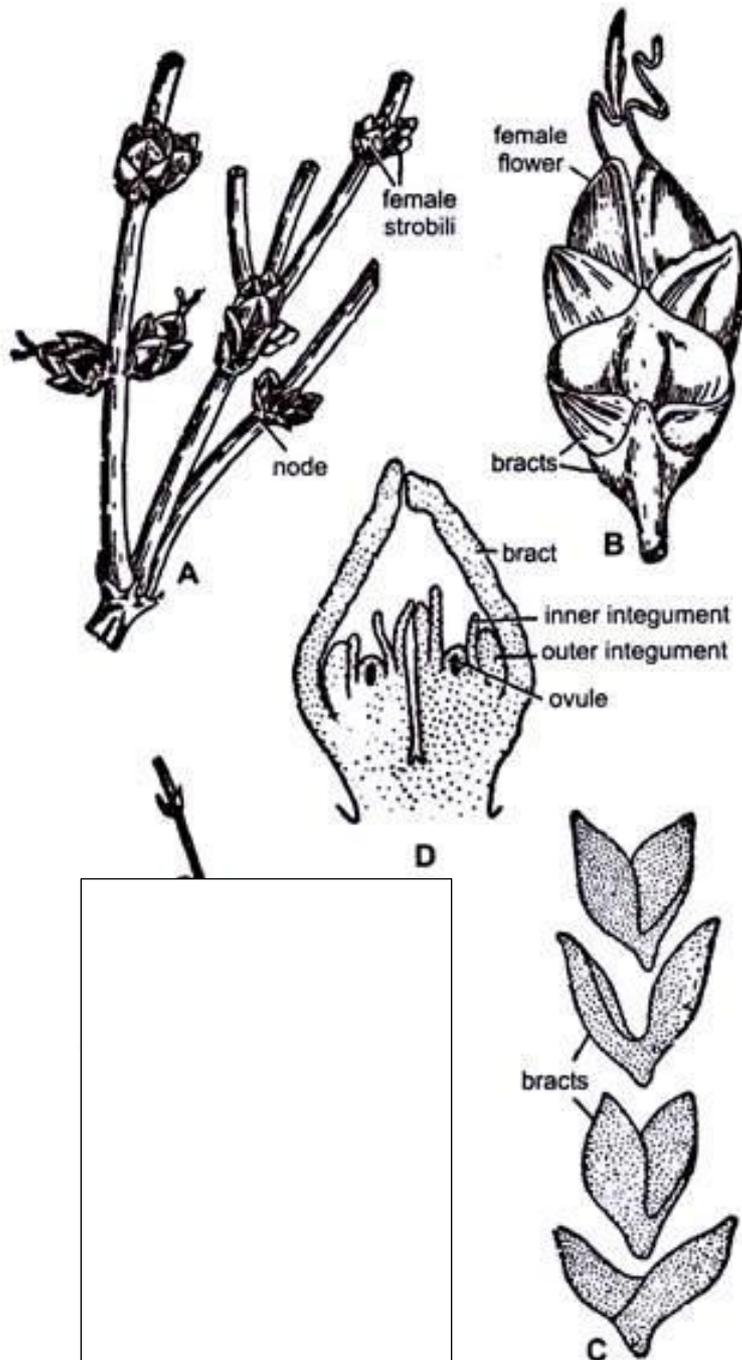
***Ephedra*: Structural details**



***Ephedra*: Morphology**



***Ephedra*: Male Strobilus A. Staminate shoot B. Male strobilus C. L.S of male strobilus D. Male Flower**



Ephedra: Female Strobilus A. Ovulate shoot B. A female strobilus
 C. Decussately arranged bracts D. L.S. of ovulate strobilus showing pair of ovules.

Similarities between *Gnetum* and *Ephedra* (of order- Gnetales)

- (1) Opposite leaves;
- (2) Vessels in their secondary wood,
- (3) Similar structure and development of perforation plates in their vessels;

- (4) Similar Gnetalean mode of development of their vessels i.e. by the dissolution of torus and middle lamella of the bordered pits;
- (5) Almost similar structure of their sieve cells and phloem parenchyma;
- (6) Spiral or annular elements in their protoxylem;
- (7) Arrangement of their flowers in compound strobili;
- (8) Unisexual flowers;
- (9) Dioecious plants;
- (10) Stalked male flowers bearing synangia made of 1-6 or more sporangia;
- (11) Almost consistent structure of the wall of their microsporangia;
- (12) Wingless pollen grains;
- (13) Orthotropous ovules;
- (14) Ovules surrounded by several envelopes which are interpreted variously as integuments or perianth;
- (15) Extremely elongated micropylar tube;
- (16) Formation of unicellular primary suspensors;
- (17) Dicotyledonous embryo;
- (18) Simple type of polyembryony.

Differences between *Gnetum* and *Ephedra*

1. *Ephedra* occurs in warm dry regions as well as at high altitudes while *Gnetum* occurs in humid tropical and subtropical regions.
2. *Ephedra* plants are generally small and bushy while species of *Gnetum* are either trees or lianes.

Ephedra leaves are small and scaly with parallel venation while Gnetum leaves are large with reticulate venation.

4. Since the leaves in Ephedra are small and scaly the photosynthetic function is mainly performed by stem. On the other hand, the leaves in Gnetum perform the function of photosynthesis.

5. A palisade-like tissue, present in the cortex of Ephedra stem is absent in Gnetum.

6. Both Ephedra and Gnetum contain vessels in their secondary wood. However, in Ephedra the vessels contain number of bordered pits on their end walls and in Gnetum a single large pore is present on the end wall of each vessel.

7. The secondary growth is of quite normal type in Ephedra while it is abnormal in Gnetum. Many accessory cambia develop to form eccentric rings of vascular tissue in Gnetum.

8. The development of male gametophyte in Ephedra is quite similar with that of a typical gymnosperm but in Gnetum it is not like that.

9. The pollen chamber in Ephedra is very deep while in Gnetum it is superficial or shallow.

10. The embryo sac is monosporic in Ephedra while it is tetrasporic in Gnetum.

11. A Tente-pole is present in Ephedra while it is generally absent in Gnetum.

12. Before fertilization the female gametophyte is cellular in Ephedra while it is partly cellular and partly free-nuclear in Gnetum.

13. The archegonia are present in Ephedra while absent in Gnetum.

14. The zygote development in Gnetum is fundamentally different from that of Ephedra.

15. The 'feeder' is absent in Ephedra while it is present in Gnetum.

Referred link: <http://www.biologydiscussion.com/gymnosperm/gnetum-distribution-habitat-and-relationships-gnetales/22583>