ANATOMY
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Anatomical characters of the genus Agapetes so far studied, are helpful to distinguish Agapetes from its allied genera Paphia and Vaccinium and are presented here under the headings of lignotuber, stem, leaf, flower, fruit and seed.

Lignotuber: Anatomically lignotubers are formed by the root-shoot ‘interface tissue’ (Specht & Womersley, 1979), an adaptive measure for their epiphytic habit or lithophytic habit.

Stem: Nodes usually unilacunar or trilacunar. Stomata on stem are paracytic. Lenticels present on stem widely in series Agapetes and few species of Gracies. Cork cambium is superficial. A subepidermal phellogen is observed in species of Agapetes. Pericycle always contains a continuous or slightly interrupted ring of sclerenchyma in different species of Agapetes. Xylem constitutes a large proportion of the stem and forms a continuous cylinder traversed by narrow rays. Vessels are with scalariform perforation plates. Pith homogenous or heterogenous, consisting cells with thick cellulose walls with simple pits. Secretary elements – cells (in a few species, somewhat elongated and resembling small sacs) with unidentified but probably tanniniferous contents noted in the phloem, medullary rays and in the pith. Solitary or clustered crystals are also found common in different species of Agapetes. Pith homogeneous in A. obovata, A. serpens (Watson, 1965).

Wood Anatomy: Wood Anatomy has been studied in a few species of Agapetes including A. serpens (M. Suzuki, 1988). Wood diffuse-porous; growth ring boundaries indistinct or absent. Vessel clusters common, solitary vessel outline angular, vessels with simple perforation or scalariform perforation plates, scalariform perforation plates with less than 10 or 10 - 20 bars, intervessel pits opposite or alternate, minute, less than or equal to 4 μm, vessel-ray pits with distinct borders, similar to intervessel pits in size and shape throughout the ray cell, helical thickenings present throughout body of vessel element, 40 – 100 vessels per square millimeter, 350 – 800 μm. Vascular / vesicentric tracheids present, fibres with distinctly bordered pits, fibre pits common in both radial and tangential walls, helical thickenings present in ground tissue fibres, septate or non-septate fibres present, fibres thin to thick walled, 71 - 1600 μm. Axial parenchyma absent or extremely rare, axial parenchyma diffuse, paratracheal, two to four cells per parenchyma strand. Larger rays commonly
4–10 seriate, ray height more than 1 mm, body ray cells procumbent with one to four rows of upright and or square marginal cells.

*Agapetes* differs from *Paphia* in having a superficial phellogen, initiated just below the epidermis, typically small (25–50μ mean tangential diameter) vessels and regular thickening and lignification of the pith cell wall (Stevens, 1972).

Superficial phellogen on stem present in *Agapetes* as well as in some sections of South East Asian sections of *Vaccinium* viz., sections *Epigynium* (Klotzsch) Hook. f., *Conchophyllum* Sleum. *Galeopetalum* J.J. Sm. etc. (Stevens, 1985).

**Leaves:** Leaves are dorsiventral. Stomata paracytic and confined to the lower surface of leaves (Niedenzu, 1890; Metcalf & Chalk, 1957; Watson, 1965). Cuticle is of varying thickness and consistently especially soft in *Agapetes*. There is a scaly covering of wax. Mesophyll sometimes includes a proportion of water-storage cells with contractile walls. Petiole at distal end, in transverse section exhibits a single cylindrical, median vascular bundle in *A. grandiflora* var. *macrantha* and *A. serpens*. Cells in the cortex and phloem of the petiole, are found with unidentified but probably with tanniniferous contents in different species of *Agapetes*. Both solitary and clustered crystals are more widely distributed.

Anatomical characters of leaves have been used in distinguishing *Agapetes* from *Paphia* (Stevens, 1972; 2004b). *Agapetes* do not have any hypodermis but it is present in *Paphia* and is often lignified. *A. miranda*, *A. forrestii* have thick walled rigid but unlignified spongy mesophyll but such kind of tissue is absent in other species of *Agapetes* (Stevens, 1972).

Generally distribution of the sclerides in the petiole and midrib and the behaviour of vascular bundle through petiole and lamina are similar in both *Agapetes* and *Paphia*. In small leaved species of *Agapetes* and rarely in big leaved species like *A. moorei* and *A. macrostemon*, the vascular bundle of the petiole is arcute (open), in other large leaved species it is circular (closed) where as in *Paphia* it is always closed (Stevens, 1972).

**Flower:** Presence of paracytic stomata on the lower surface of sepal found in *A. serpens* and *A. obovata* (Watson, 1965). Ovary is generally falsely 10-locular with axile placentation in *Agapetes* and is formed by the inpushing of the wall of the ovary where as in *Paphia*, ovary is 5-locular (Stevens, 1972). This falsely 10-locular ovary
is also common in some sections of South East Asian sections of Vaccinium viz., sections Epigynium (Klotzsch) Hook. f., Conchophyllum Sleum. Galeopetalum J.J. Sm. etc. (Stevens, 1985).

**Fruit:** In *Agapetes* testa cells of seeds are large and elongated with variable wall thickening and in some species the testa becomes mucilaginous on wetting and these seeds have a green embryo, where as *Paphia* does not have elongated testa cells and the anticlinal and periclinal walls of the testa cells are considerably thickened and embryo is white (Stevens, 1972).