

**FORMAL DESCRIPTION OF THE FAMILY PENTASTEMONACEAE
with some additional notes on Pentastemonaceae and Stemonaceae**

BRIGITTA E. E. DUYFJES

Rijksherbarium / Hortus Botanicus, Leiden, The Netherlands

INTRODUCTION

The discriminating characters of some genera of the family Stemonaceae (incl. *Stemona*) and the genus *Pentastemona* (formerly in the Stemonaceae) have been amply discussed by the present author (1991). The discussion resulted in the statement that *Pentastemona* represents a family of its own, Pentastemonaceae, beside Stemonaceae. The forthcoming treatment of both families in Flora Malesiana (Duyfjes, 1992) requires the formal description of Pentastemonaceae. The supporting considerations for the distinction of the new family are briefly enumerated again:

	Pentastemonaceae (<i>Pentastemona</i>)	Stemonaceae
Growth habit	monopodial	sympodial
Leaves	dispersed	distichous, opposite or verticillate
Petioles	shortly sheathing at the base	not sheathing at the base
Scale leaves	on the rootstocks	no scale leaves present
Inflorescences	essentially compound	not compound
Flowers	5-merous, tepals and stamens in one whorl each	4-merous, tepals and stamens each in two whorls of two
Stamens	connectives, together with the top of the hypanthium and the ovary grown into a complicated disk-like structure	filamentous, connectives narrow or broad, mostly with conspicuous appendages; see Van Heel (1992)
Ovary	inferior with three parietal placentas; ovules many, anatropous	superior (<i>Stemona</i>) or semi-inferior (<i>Stichoneuron</i>), with placentas basal (<i>Stemona</i>) or apical (<i>Stichoneuron</i>), with few or many anatropous or semi-anatropous ovules
Pedicels	not articulated	articulated
Fruit	inferior, berry-like	superior (<i>Stemona</i>) or semi-inferior (<i>Stichoneuron</i>); a 2-valved capsule
Seed	seeds with sarcotesta-like hyaline exotestas; arillode inflated	seeds without sarcotesta-like exotestas; arillode various, not inflated; see Bouman & Deventer (1992)
Pollen	Exine inaperturate, scabrate sexine architecture	distinct from <i>Pentastemona</i> ; see Van der Ham (1991)

PENTASTEMONACEAE Duyfjes, *fam. nov.*

Herbae monopodialiter crescentes, haud ramosae. Folia dispersa, basi spatha circumdata. Inflorescentiae pedunculatae, compositae. Flores 5-meri, tepalis uniseriatis partialiter in tubum unitis. Stamina uniseriata, sessilia, cum hypanthio ovarioque in structuram complicatam discoideam connata. Ovarium inferius, placentis 3 parietalibus, ovulis numerosis anatropis. Fructus baccam simulans, seminibus exotesta hyalina circumdatis, arilodio inflato. — Typus: *Pentastemona* Steen., *Blumea* 28 (1982) 160.

Juicy unbranched herbs of monopodial growth with scale leaves on rootstocks, growing on sloping rocks. *Leaves* dispersed, entire, long-petioled, shortly sheathing at the base, with curved lateral nerves trabeculately connected by numerous crossbar veins, partly, and also other organs, beset with multiseriate hairs. *Inflorescence* peduncled, axillary, compound. *Flowers* wholly or partly functionally unisexual, pedicelled, 5-merous; tepals in one whorl, almost free, or partially united into a tube, lobes imbricate; stamens in one whorl, more or less sessile, the connectives together with the top of the hypanthium and the ovary grown into a swollen disk-like structure, leaving five pouches in which each two thecae of adjacent anthers are situated; ovary inferior with three parietal placentas with many anatropous ovules. Fruit inferior, distinctly ribbed, berry-like, containing many seeds embedded in their sarcotesta-like hyaline exotestas, arilode inflated.

Growth under greenhouse conditions — *Pentastemona sumatrana* Steen. seems to grow in the Leiden greenhouse more vigorously than *P. egregia* (Schott) Steen. It can be propagated from detached leaves, as was already known for *P. egregia*.

Stomatal contact cells — Conover (1991) found in parallel-veined leaves of genera related to the Liliiflorae, including *Stemona* and *Stichoneuron*, that the stomata are surrounded by four or more contact cells. She argued that this character, as also found in *Pentastemona* (Van Steenis, 1982: 159), supports the inclusion of *Pentastemona* in Stemonaceae, as proposed by Van Steenis (1982).

ACKNOWLEDGEMENTS

Thanks are due to Dr. H.O. Sleumer for providing the translation into Latin of the diagnosis of the new family. The directors of the herbaria at Kew and Kyoto are acknowledged for the loan of material to Leiden.

REFERENCES

- BOUMAN, F., & N. DEVENTE. 1992. A comparison of the structure of ovules and seeds in *Stemona* (Stemonaceae) and *Pentastemona* (Pentastemonaceae). *Blumea* 36: 501–514 (this issue).
- CONOVER, M.V. 1991. Epidermal patterns of the reticulate-veined Liliiflorae and their parallel-veined allies. *Bot. J. Linn. Soc.* 107: 295–312.
- DUYFJES, B.E.E. 1991. Stemonaceae and Pentastemonaceae; with miscellaneous notes on members of both families. *Blumea* 36: 239–252.
- DUYFJES, B.E.E. 1992. Stemonaceae, Pentastemonaceae. *Flora Malesiana ser. I*, 11¹ (in press).
- HAM, R.W.J.M. VAN DER. 1991. Pollen morphology of the Stemonaceae. *Blumea* 36: 127–159.
- HEEL, W.A. VAN. 1992. Floral morphology of Stemonaceae and Pentastemonaceae. *Blumea* 36: 481–499 (this issue).
- STEENIS, C.G.G.J. VAN. 1982. *Pentastemona*, a new 5-merous genus of Monocotyledons from North Sumatra (Stemonaceae). *Blumea* 28: 151–163.