Observations on some taxonomic features of
Tetragoga cruciata BREM. (Acanthaceae)

Hiroshi TERAO*

寺尾 博：Tetragoga cruciata BREM. の指標形質について

BREMEKAMP (1944, 1948, 1956, 1961, 1965) splitted the genus Strobilanthes into 45 genera and added 10 others allied to them. Tetragoga BREM. was separated from the other genera and was recognized as a distinct genus based on the characteristic pollen and spike. BREMEKAMP (1944) recognized two species in Tetragoga, T. cruciata BREM. from Sumatra and T. nagaeensis BREM. from Assam. Hossain (1973) referred Strobilanthes esquirolii Levl. to Tetragoga. However, as neither the pollen** nor the spike** agree with those of Tetragoga, we cannot regard S. esquirolii as a member of Tetragoga. No more species has hitherto been referred to Tetragoga. Through the courtesy of the director, Rijksherbarium, Leiden (L), I had an opportunity to examine the type specimen of T. cruciata. Based on this specimen, I have reexamined some taxonomic features of Tetragoga, and am intending to discuss here the taxonomic identity of Tetragoga. As no specimens were examined for T. nagaeensis, the generic recognition of Tetragoga is based solely on T. cruciata.

Observation and discussion

Although there are intermediate forms, the pollens of Strobilanthes can generally be classified into two types: ellipsoidal and globose. Ellipsoidal pollens have longitudinal bands. In the species of Eastern Asia, the bands are generally provided with ladder-like reliefs (Fig. 1-A). Having ellipsoidal pollen, each band of the pollen of Tetragoga has a strong ridge near its center (Fig. 1-D). It is noteworthy, however, that a weak ridge is sometimes observed running along the strong ridge (Fig. 1-D). Mentions should be made here of the pollens of Tetraglochidium deliense BREM. from Sumatra (Fig. 1-C) and Strobilanthes galeopsis Stapf from Borneo (Fig. 1-B). Although both of these species have ellipsoidal pollens, the transverse ridges of the ladder-like reliefs of the bands are frequently reduced and, as the result, the bands are often provided chiefly with two longitudinal

* Department of Botany, Faculty of Science, Kyoto University, Kyoto 606.
** The pollen is ellipsoidal and has longitudinal bands with ladder-like reliefs. The spike is capituliform and has dense bracts, but is not wholly surrounded by the lower pairs of bracts.
ridges. In *S. galeopsis*, the longitudinal ridges are situated at both edges of the band, but they are more inside in *T. deliense*, apart from both edges of the band. Moreover, one of the two longitudinal ridges is rarely observed to be rudimental in *T. deliense* (Fig. 1-C). These observations suggest that the pollens of *Tetragoga* have derived from the ellipsoidal pollens with ladder-like reliefs through the reduction of the transverse ridges of the reliefs

![Fig. 1. Pollens of A: *Strobilanthes bibracteata* (Blume, s.n. H.L.B. 897. 280–150 L), B: *S. galeopsis* (Kokawa & Hotta 1778 KYO), C: *Tetraglochidium deliense* (Iwatsuki et al. S 752 KYO) and D: *Tetragoga cruciata* (Loerzing 5668 L). A scale indicates 10 μm.](image1)

![Fig. 2. Sketches of the spikes of A: *S. galeopsis* (Kokawa & Hotta 1892 KYO), B: *Tetraglochidium deliense* (Iwatsuki et al. S 752 KYO) and C: *Tetragoga cruciata* (Loerzing 5668 L). Indumentum is not drawn. All, ×1.](image2)
followed by the reduction of one of the two longitudinal ridges and the development of the other.

Another feature evaluated by Bremekamp (1944) in diagnosing Tetragoga is involucrate capituliform spike. The spike of Tetragoga is strongly abbreviated and is wholly surrounded by the lowest two pairs of leaf-like bracts which consist of wide petiolar parts tightly clasping the spike and spreading laminar parts (Fig. 2-C). Among the species of Strobilanthes with ellipsoidal pollens which Bremekamp (1.c.) classified into the genera of group P*, we can find a continuous series of variation in inflorescences. S. galeopsis is referable to Pyrothrix BREMEK AMP.**, one of the genera of group P. Pyrothrix generally has an abbreviated spike with dense leaf-like bracts. Being somewhat lax, the spike of S. galeopsis (Fig. 2-A) agrees with that of Tetragoga in having lower leaf-like bracts with wide petiolar parts and spreading laminar parts. The spike of Tetragoga may be regarded as a strongly abbreviated form of the spike like this. Tetraglochidium BREM. is another genus of group P, having a strongly abbreviated spike which is entirely enveloped by a pair of large leaf-like bracts at the base of the spike (Fig. 2-B). Although the basal bracts of T. deliense (Fig. 2-B) are not clearly differentiated into petiolar parts and laminar parts, the lower halves of the bracts are more rigid than the upper halves with dentate margines and are tightly clasping the spike. The spike of Tetragoga may have derived from the spike like this by the differentiation of the basal bracts. In either case, it may safely be concluded that the spike feature of Tetragoga is not sufficient to indicate the generic distinction.

All the other features of Tetragoga agree with those of Strobilanthes referable to group P as was already pointed out by Bremekamp (1.c.).

From the above observations and discussions, we may safely conclude that there is no sufficient basis to separate Tetragoga generically from Strobilanthes. Tetragoga may be related to the species of Strobilanthes having ellipsoidal pollens and capituliform spikes which Bremekamp (1.c.) referred to such genera as Tetraglochidium and Pyrothrix.

** Taxonomy **


Further discussion on the delimitation of Strobilanthes will be given in a publication on the classification of Strobilanthes and its allies.

* Many species of Strobilanthes of Eastern Asia characterized by having ellipsoidal pollens, erect anthers, anisophyllous leaves, resupinate corollas and hairy seeds have been placed in group P. In spite of the variation in spike, bract, bracteole, calyx, indumentum, etc., these species are closely related to one another and seem to form a distinct subgroup of Strobilanthes.

** Although BREMEKAMP (1.c.) referred S. galeopsis to Semnostachya BREM., a close ally of Pyrothrix, the rather dense spike with leaf-like bracts and the brownish hairs covering the plant indicate that S. galeopsis is better referred to Pyrothrix.
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References


抄録

Tetragoga は、BREMEKAMP (1944) により、その特徴的な花粉 (Fig. 1-D) と花序 (Fig. 2-C) のために、イセハナビ亜属 subtribe Strobilanthinae の中立独立とみなされた。しかし、Tetragoga の花粉と、広義のイセハナビ属 Strobilanthes s. l. に普通にみられる花粉 (Fig. 1-A) と間の移行的な形態を示す花粉 (Fig. 1-B, C) を持つ種が、広義のイセハナビ属に認められる。また、Tetragoga の花序 (Fig. 2-C) も、広義のイセハナビ属の花序 (Fig. 2-A, B) にみられる変異を考慮に入れると、属を指標する形態とは認めがたい。したがって、Tetragoga は広義のイセハナビ属に合一するのが適当と考える。

抄録