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A New Species of *Gastrodia* R. Br. (Orchidaceae) from Silent Valley, Kerala, India

C. Sathish Kumar, P. C. Suresh Kumar, M. Sibi and S. Anil Kumar

Tropical Botanic Garden & Research Institute
Pacha Palode, Thiruvananthapuram – 695 562, India.
E-mail : sathishkumar_57@rediffmail.com
sibitbgri@rediffmail.com

Abstract

Gastrodia silentvalleyana Sathish, Suresh, Sibi & Anil (Orchidaceae), a new species is described from Silent Valley National Park, Palakkad, Kerala, India. It is related to *G. pubilabiata* Y. Sawa of *G. verrucosa* group but different in having a glabrous rhizome, globose flowers, sepaline tube warty on abaxial surface at margins, rhomboid petals and a deltoid acuminate lip with a tongue like thickening at the epichile.

Keywords: *Gastrodia silentvalleyana*, New Species, Silent Valley, Kerala

Introduction

Gastrodia R. Br. is a saprophytic genus of about 20 species distributed in the Old World. It belongs to the subtribe *Gastrodiinae* (Lindl.) Meisn. of tribe Gastrodieae Lindl. of the subfamily Epidendroideae (Pridgeon *et al.,* 2005) . The subtribe Gastrodiinae has only two genera *Didymoplexis* and *Gastrodia,* both are very much related and are achlrophyllous holomycotrophic herbs.

Robert Brown described *Gastrodia* based on a collection from New Zealand. As the flowers of his species resembled that of sesame flowers Brown called it *Gastrodia sesamoides*, which has been later found to extend to Australia. As many as 60 binomials are described in this genus based on scanty materials which mostly consist of type collections only and that a detailed study alone will reveal the actual number of species. Recent findings (Chung & Hsu 2006; Kobayashi & Yukawa, 2001; Li & Liu, 2007; Liu & Chen, 1983; Meng *et al.* 2007; Suddee, 2005; Tuyama, 1982) of many new and rare species of *Gastrodia* from different regions of Asia only reiterate that there are many surprises in store for us if we specifically look for these delicate plants in the forest floor. Though a detailed analysis of the genus has not been undertaken so far, obviously due to the lack of sufficient materials for a closer study, based on available literature and materials we can broadly classify the species into two categories: one with very short (4-10 cm) stems and fleshy flowers and the other with long stems (15 cm and above) and mostly nodding flowers. The first group is represented by *Gastrodia verrucosa* Blume and its many allies like *G. pubilabiata* Y. Sawa, *G. nipponica* (Honda)Tuyama, *G. shimizuana* Tuyama, *G. confusa* Honda & Tuyama, *G. boninensis* Tuyama and the novelty described here. Sri Lanka also has one species in this group, but is yet to be named (Fernando, in lit.).

During a discussion on *Gastrodia zeylanica* Schltr. and its possible occurence in South India a decade ago, Mr Paul Ormerod (Australia) suggested the first author to look for it, as many supposedly Sri Lankan endemics were later found here. Paul's suggestion inspired us to search for these delicate plants in Agastyamala eventually ending up in discovering *Gastrodia exilis* Hook. f. from South India, constituting simultaneously a new genus and species record (Sathish Kumar & Suresh Kumar, 2001). We also had a running correspondence with our Sri Lankan colleague Mr Suranjan Fernando who showed us *Gastrodia zeylanica* which he rediscovered after a

century. Along with this he also discovered an yet undescribed species. Incidentally, Jayaweera's treatment (1982) of Orchidaceae of Ceylon contained one *Gastrodia zeylanica*, which was a true *Didymoplexis*, a genus then unrecorded from the island nation. As we were working on this genus, a few years later, one of us (MS) collected this curious orchid which is described here as a new species. We tried to collect

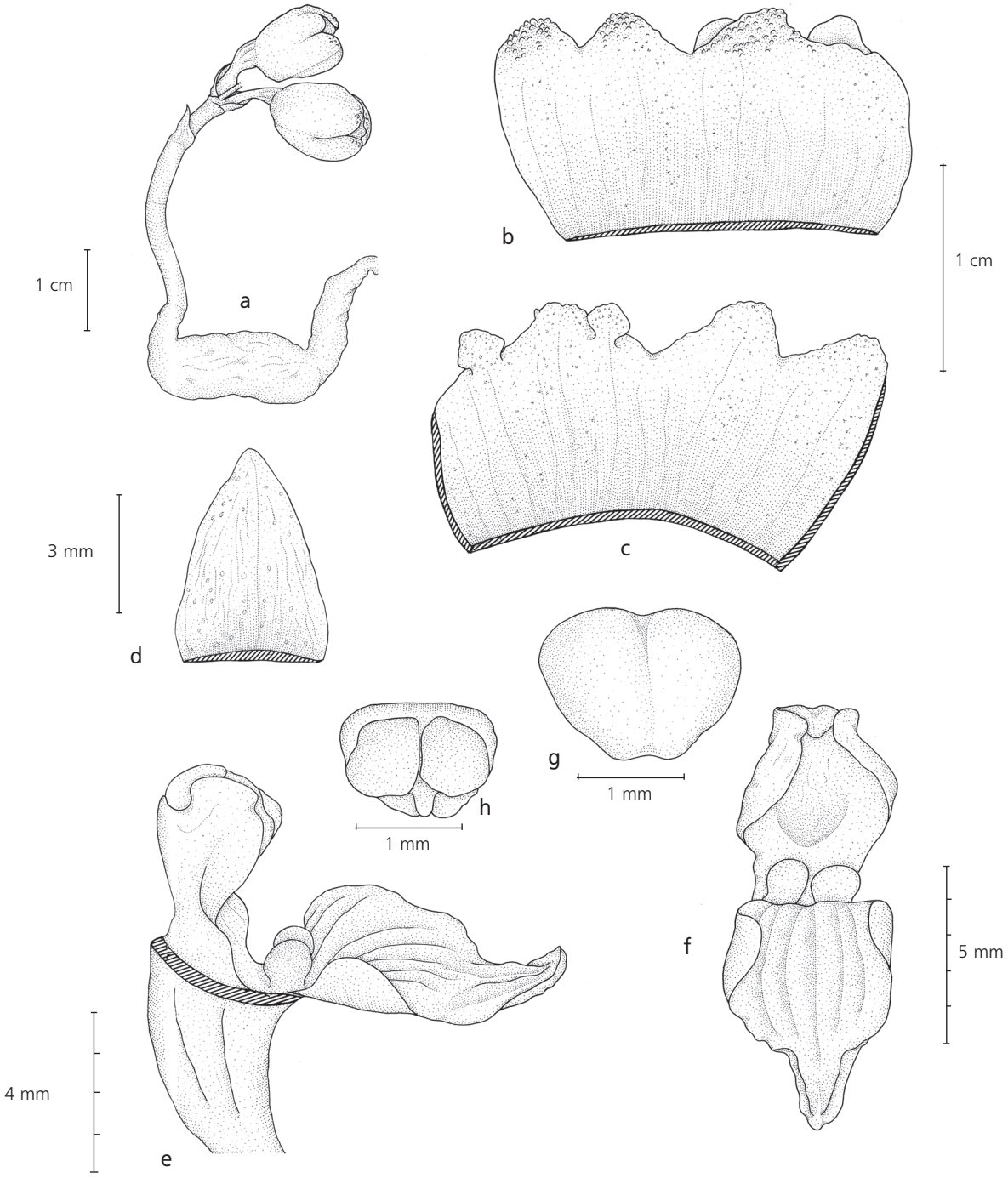

Figure 1. ***Gastrodia silentvalleyana*** Sathish, Suresh, Sibi & Anil - **a**. Habit; b. Sepaline Tube cut opened, dorsal view; **c**. Sepaline Tube cut opened, Ventral View showing rhomboid petals; **d**. Floral Bract; **e**. Flower (sepaline tube removed) showing ovary, column and lip, side view; **f**. Flower (sepaline tube removed) showing column and lip, front view; **g**. Operculum; **h**. Pollinia (All drawn from the type by P. C. Suresh Kumar).

more materials of the novelty from the type locality and the adjoining areas all these years at different seasons without success.

Gastrodia silentvalleyana Sathish, Suresh, Sibi *et* Anil, ***sp. nov.*** **Fig. 1 & 2**

Gastrodia silentvalleyana affinis *G. pubilabiata* sed differt rhizoma glabra, flos globosus, tubo sepalinus verruciformis ad margine pagina abaxilis; petala rhomboidea, labium deltoideus vel acuminatum et lingulatus spissescens ad epichile.

Type: INDIA, **Kerala**, Palakkad District, Silent Valley National Park ± 1040 m., 22 December 2003, *M. Sibi 43300* (holo, TBGT).

Achlorophyllous holomycotrophic herbs to 4 cm tall. *Rhizome* 3.8 x 1.3 cm, horizontally spreading, slightly wrinkled, glabrous with a jointed leafless shoot. *Scape* 3 cm long, 2.5 mm thick, cylindric, fleshy, glabrous and with a few clasping bracts. Floral bracts 6 x 4 mm, triangular, gland dotted, 1-viened and acute. *Flowers* 2, globose, chocolate-brown, subtended by floral bracts; a diminutive third bud is also seen; sepaline tube 2.2 x 1.2 cm, fleshy, gland-dotted, 13-veined and fused nearly to the apex leaving the triangular-obtuse apices of the sepals which are with small wart like projections distally on the dorsal surface; petals 1.5 x 2 mm, rhomboid, obtuse; lip 8 x 7 mm, deltoid, deep brownish, 8-veined, clawed at base and acuminate at apex; claw with a pair of grape like calli at base; the acuminate epichile narrow with upwardly curved apex having a tongue like thickening; column about 4.5 x 4 mm, broadly winged at apex with anterior ends inwardly folded; operculum at top, 2 x 1.5 mm with a pair of granular pollinia; stigma deeply seated at the middle of the column. *Fruits* not seen.

Gastrodia silentvalleyana Sathish *et al.* is mostly related to *G. pubilabiata* Y. Sawa (Sawa, 1980) and *G. shimuzuana* Tuyama in being short stemmed fleshy plants but differs from the two in having a glabrous rhizome, globose flowers, sepaline tube warty on abaxial surface at margins, rhomboid petals and a deltoid acuminate lip with a tongue like thickening at the epichile. These species belong to the *G. verrucosa* group with short stature and fleshy flowers. This is the first time that a species belonging to this group has been discovered from India.

Figure 2. *Gastrodia silentvalleyana* Sathish, Suresh, Sibi & Anil (Photograph by M. Sibi)

Habitat: Primary forest in thick litter under the heavy shade of a huge tree *Cassine kedarnathii* Sasidharan & Swarup. The vegetation in the vicinity is composed of trees like *Palaquium ellipticum (*Dalz.) Baill., *Cullenia exarillata* Robyns, *Mesua ferrea* L., *Syzygium laetum* (Buch.-Ham.) Gandhi, *Callicarpa tomentosa* (L.) Murray, *Calophyllum polyanthum* Wallich ex Choisy, *Mallotus tetracoccus* (Roxb.) Kurz, *Ficus beddomei* King and shrubs like *Memecylon umbellatum* Burm. f., *Strobilanthus barbatus* Nees, *Thottea siliquosa* (Lam.) Ding Hou, *Sarcandra chloranthoides* Gardner, *Saprosma glomerata* (Gardner) Bedd. and *Lasianthus jackianus* Wight.

Flowering: December-January

Occurrence: This species has been collected only once from the type locality.

Distribution: Endemic.

Specimen Examined: INDIA, **Kerala**, Palakkad District, Silent Valley National Park ± 1040 m., 22.12.2003, *M. Sibi 43300* (Holo,TBGT!).

Note: This is the first time that a novelty of the *Gastrodia verrucosa* group is discovered from India. All other species (*G. arunachalensis* Hegde & Rao, *G. dyariana* King & Pantl., *G. exilis* Hook. f., *G. falconeri* Jones & Clem. and *G. mishmensis* Rao) known from India belong to *G. sesamoides* group.

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