

## *Hedychium longipetalum* (Zingiberaceae), a new species from Yunnan, China

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Received 20 Mar. 2009, revised version received 20 Apr. 2009, accepted 21 Apr. 2009

Hu, X. & Liu, N. 2010: *Hedychium longipetalum* (Zingiberaceae), a new species from Yunnan, China. — *Ann. Bot. Fennici* 47: 237–239.

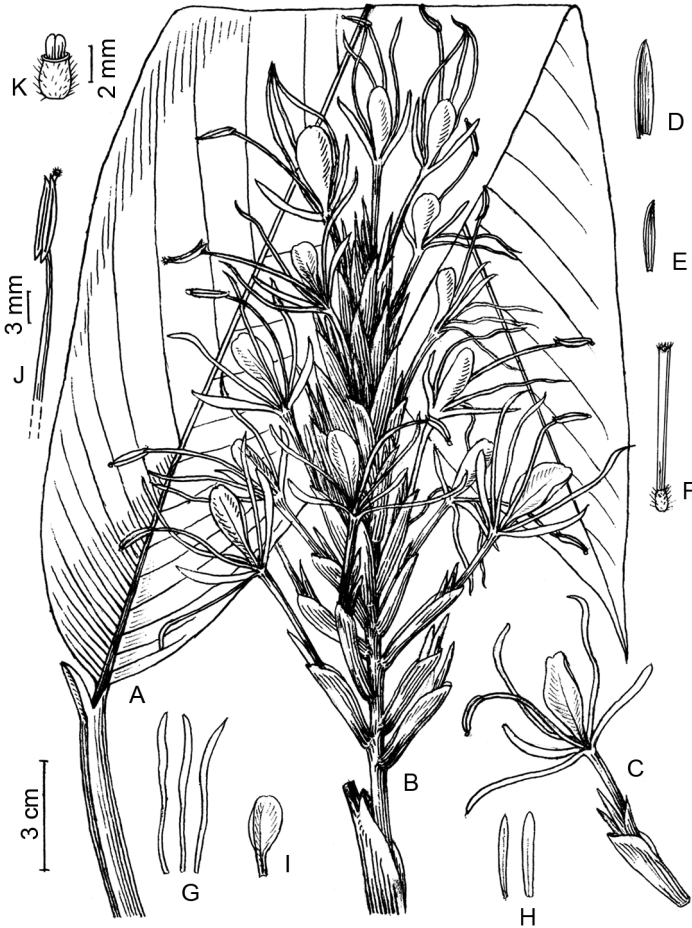
*Hedychium longipetalum* X. Hu & N. Liu *sp. nova* (Zingiberaceae), from Yunnan Province, China, is described and illustrated. It resembles *H. yunnanense*, but differs from that species in the number of flowers per bract, in the form of the labellum, and in the length of the petal lobes.

Key words: angiosperms, floristics, *Hedychium*, new species, taxonomy, Zingiberaceae

The genus *Hedychium* (Zingiberaceae) was established by J. König in 1783. It is an economically important genus used for cut flowers, with species possessing flowers with a wide range of color and fragrances similar to honeysuckle, jasmine, and sweet-scented osmanthus orchid. *Hedychium* is mainly distributed in tropical Asia, with some species extending to Australia (Wu 2000). The genus is characterized by flowers with very long (rarely short) filaments, dorsifixed anthers, and usually fragrant flowers. The genus is in need of a comprehensive taxonomic revision. There is currently little consensus on the number of species, with recent estimates varying from about 50 (Wu 2000) to 80 (Siriruga & Larsen 1995). A taxonomic division of *Hedychium* into two subgenera based on bracts imbricate or not was questioned in a molecular study (Wood *et al.* 2000). Instead, the number of flowers per bract was considered to be a more

important character for the division of subgenera (Wood *et al.* 2000).

Twenty-eight species of *Hedychium* are recognized in the Flora of China (Wu 2000), of which about 23 are found in Yunnan province (Tong 1999, Wu 2000). During one of three expeditions in Yunnan from 2006 to 2008, we found a plant which looked like *Hedychium yunnanense* in the understory of *Pinus yunnanensis* forest, on a hill at an altitude of 1400 m. We noted in the field that it possessed more than two flowers per bract, so we collected its rhizomes for transplantation to our nursery in Guangzhou. When this plant flowered in the nursery in September 2007 and 2008, the number of flowers in each bract was consistently more than two. Based on further morphological studies and literature surveys (Schumann 1904, Gagnepain 1907, Naik & Panigrahi 1961, Larsen 1965, Rao & Verma 1969, Hara *et al.* 1978, Smith 1991,



**Fig. 1.** *Hedychium longipetalum* (from the holotype, drawn by Han-Ping Yu). — **A:** Leaf. — **B:** Inflorescence. — **C:** Bract and flowers. — **D:** Bract. — **E:** Bracteole. — **F:** Calyx. — **G:** Corolla lobe. — **H:** Lateral staminodes. — **I:** Labellum. — **J:** Anther. — **K:** Ovary and glands.

Schilling 1982, Siriugsa & Larsen 1995, Wood *et al.* 2000), we concluded that it represents a new species, which is described below.

***Hedychium longipetalum*** X. Hu & N. Liu, *sp. nova* (Fig. 1)

*H. yunnanensi* Gagnepain affinis, sed floribus in quaque bractea 2–4 (non 1), petalis 4.5 cm non 2.5–3 cm longis quam labello duplo longis, labello elliptico apice integro vel emarginato (non ad medium fisso) differt.

**HOLOTYPE:** China. Yunnan Province, Puer county, Nakeli village, 22°41'37"N, 101°13'47"E, alt. 1460 m, 27.IX.2006 *Hu Xiu 010* (IBSC, isotype MO). — **PARATYPE:** China. Guangdong Province, Guangzhou, greenhouse of Zhongkai Agriculture and Engineering university, *Hu Xiu 199* (IBSC).

**ETYMOLOGY:** Because the petals (4–4.5 cm) are nearly

twice the length of the labellum (2–2.5 cm), we name this species *Hedychium longipetalum*.

Rhizome tuberous, pseudostems slender, 1–1.5 m. high. Petiole 1–1.5 cm long; ligule oblong, entire, 1.5–2.5 cm long, membranous, pinkish; leaf blade ovate-oblong to oblong, ca. 20–35 × 8–10 cm, glabrous, base attenuate into short petiole, apex caudate. Spikes ca. 10–20 cm long, axis green, pilose; bracts lanceolate, 2–2.5 cm long, 2–4-flowered, margin involute; flowers white, fragrant. Calyx 2.5–3 cm long, apex obtusely 3-toothed, light green; corolla tube 4–4.5 cm long, slender, light yellow; lobes linear, 4–4.5 cm long, nearly twice as long as labellum, light yellow; lateral staminodes oblong-linear, 2.5–3 cm long, 3 mm wide, white; labellum obovate, ca. 2–2.5 × 1–1.1 cm, entire or emarginate, white; filament 3.5–4 cm long, orange; anther

**Table 1.** A morphological comparison of *Hedychium longipetalum* and *H. yunnanense*.

Character	<i>H. longipetalum</i>	<i>H. yunnanense</i>
Color of ligules	pinkish	light green
Flower number per bract	2–4	1
Length of lobes(cm)	4–4.5	2.5–3
Apical shape of labellum	apex entire to emarginate	apex bifid to ca. 1/2 its length
Length of labellum (cm)	2–2.5	2.5–3

1–1.2 cm long, orange to yellow; ovary light green, pilose, with two yellow tapering glands at the apex; stigma capitate, light yellow; stylodia filiform. Capsule 1.0–1.5 cm in diam., 3-angled; seeds many; aril red, lacerate. Flowering Sep.–Oct., fruiting Nov.–Dec.

*Hedychium longipetalum* is similar to *H. yunnanense* (cf. Gagnepain 1907), but differs in having 2–4 flowers per bract, in the length of the corolla lobes, and in the shape of the labellum apex (Table 1). The number of flowers subtended by each bract, the shape of the labellum apex, and the length of the labellum have been used as important characters to distinguish species in *Hedychium* by many workers (Naik & Panigrahi 1961, Siriugsa & Larsen 1995, Wu 2000). In a recent study based on molecular evidence, Wood *et al.* (2000) distinguished subgenera based on the numbers of flowers per bract. Our research using SRAP markers supports Wood's view (Gao *et al.* 2008).

REPRESENTATIVE SPECIMENS EXAMINED of *H. yunnanense*. — **China.** Yunnan, Kunming, Xishan, alt. 2000 m, *X. Hu 029* (SCBG). Yunnan, Tengchong, Qushi village, Old crater, alt. 1938 m, *X. Hu 095* (SCBG). Yunnan, Liuku, Pianma village, on the border to Vietnam, alt. 1800 m, *X. Hu 080* (SCBG). Yunnan, Kunming, West mountain, Taihua Temple, *B. Y. Qiu 57159* (KUN). Yunnan, Dali, *H. C. Wang 28393* (KUN). Yunnan, Dali, *Liu S. E. 16407* (KUN). Yunnan, Dali, Yangbi, alt. 2450 m, Botanical Expedition to Cangshan, 1984, in collaboration between the University of Tokyo and Kunming Botanical Institute, *K. Iwatsuki et al. 475* (KUN).

## Acknowledgements

We are grateful to Mr. T.-L. Wu for providing rare publications on the genus *Hedychium* and for checking our Latin description. We thank our artist, Mr. H.-P. Yu, for his illustration. We also thank for Mr. W. Tom for checking the language. The paper was improved by comments from an

anonymous referee. The study was supported by the grant (2006B20201044) from Guang Dong Science and Technology Department, China.

## References

- Gagnepain, M. F. 1907: Zingiberaceae nouvelles de l'herbier du museum. — *Bulletin de la Societe Botanique de France* 22: 164–165.
- Gao, L. X., Hu, X., Liu, N., Huang, B. H., Li, Z. J. & Li, Y. 2008: Cluster analysis of Chinese *Hedychium* based on SRAP markers. — *Journal of Systematics and Evolution* 46: 899–905.
- Hara, H., Stearn, W. T. & Williams, L. H. J. 1978: *An enumeration of the flowering plants of Nepal*. — Trustees of British Museum (Natural History), London.
- Larsen, K. 1965: Studies in Zingiberaceae V: *Hedychium* — some new Indo-Chinese taxa. — *Svensk Botanisk Tidsskrift* 61: 71–79.
- Naik, V. N. & Panigrahi, G. 1961: Genus *Hedychium* in Eastern India. — *Bulletin of Botanical Survey, India* 3: 67–73.
- Rao, A. S. & Verma, D. M. 1969: Note on *Hedychium* Koenig, including four new species from Kiiasi & Jaintia Hills Assam. — *Bulletin of Botanical Survey, India* 11: 120–128.
- Schilling, T. 1982: A survey of cultivated Himalayan and Sino-Himalayan *Hedychium* species. — *The Plantsman* 4: 129–149.
- Schumann, K. 1904: Zingiberaceae. — In: Engler, A. (ed.), *Das Pflanzenreich* 20: 40–59. W. Engelmann, Leipzig.
- Siriugsa, P. & Larsen, K. 1995: The genus *Hedychium* (Zingiberaceae) in Thailand. — *Nordic Journal of Botany* 15: 301–304.
- Smith, R. M. 1991: Note relating to the flora of Bhutan: XVII. — *Edinburgh Journal of Botany* 148: 23–25.
- Wood, T. H., Whitten, W. M. & Williams, N. H. 2000: Phylogeny of *Hedychium* and related genera (Zingiberaceae) based on ITS sequence data. — *Edinburgh Journal of Botany* 57: 261–270.
- Wu, T. L. 2000: Zingiberaceae. — In: Wu, Z. Y. & Raven, P. H. (eds.), *Flora of China* 24: 322–377. Science Press, Beijing and Missouri Botanical Garden Press, St. Louis
- Tong, S. Q. 1999: Zingiberaceae. — In: Wu, Z. Y. (ed.), *Flora Yunnanica* 8: 528–560. Science Press, Beijing. [In Chinese].