DISTICHOCHLAMYS, A NEW GENUS FROM VIETNAM

M. F. NEWMAN*

A new monotypic genus, *Distichochlamys* (Zingiberaceae; Hedychieae), and its species, *D. citrea*, are described from central Vietnam. Its affinities lie with *Scaphochlamys* and *Boesenbergia* and, through them, to the wider group containing *Kaempferia* and *Haplochorema*.

INTRODUCTION

During an expedition to Vietnam between November 1989 and March 1990 I was able to collect living material of a number of Zingiberaceae for cultivation at the Royal Botanic Garden Edinburgh. Few species were in flower so, at best, I could only name them in the field to genus.

One of these collections flowered in Edinburgh in 1993. It is a new species belonging to the group of genera in the tribe Hedychieae in which the leafy stems are usually few-leaved and of low stature.

Distichochlamys M.F. Newman, **gen. nov.** *Scaphochlamydi* Baker habitu et facie florum similis; sed bracteis primariis (in *Scaphochlamyde* spiralibus) distichis, bracteolis tubularibus, labello bifido applanato et calcaribus basalibus antherae carentibus. Species holotypica: *Distichochlamys citrea* M. F. Newman.

Rhizomatous herb. Inflorescence terminal on the leafy shoots. Primary bracts distichous. Bracteoles tubular. Proximal flower of each cincinnus opening first. Labellum bilobed and flat, not saccate. Anther without basal spurs.

Distichochlamys citrea M.F. Newman, **sp. nov.** faciem *Kaempferiae cochinchinensis* Gagnep. simulans sed foliis paucioribus majoribus bracteis primariis distichis et labello profunde bifido ab ea statim dignoscenda.

Small herb to 35cm, rhizome c.5cm below ground level. Leafy shoots close together producing a dense clump, (1–)2(–3)-leaved, with basal sheaths to 10 × 2.5cm which dry to a papery texture by anthesis. Plane of distichy of leaves parallel to rhizome. Leaf to 42cm long; petiole to 20cm, stiff, deeply channelled on adaxial surface, very sparsely silky hairy, shiny; ligule small, c.5mm long, drying and decaying by anthesis; leaf blade 17–22 × 8.3–10.7cm, broadly elliptical, midrib markedly eccentric, base cuneate or rounded, equal or not, apex shortly acute, glabrous above, slightly shiny, sparsely silky hairy below, especially on the midrib, glossy. Inflorescences terminal

* Royal Botanic Garden Edinburgh, Inverleith Row, Edinburgh EH3 5LR, UK.

on leafy shoots on a scape 1.5–2.5cm long, total height to 9.5cm. Bracts distichous, held to one side of the rhachis, 23–25 × 12mm, covered with adpressed, silky hairs outside, shiny and glabrous inside, dark pinky-red, usually subtending three flowers to maturity and one or two more which do not develop. Bracteoles tubular, 21–23mm long, split for about half their length, clear pink. First bracteole two-keeled and three-pointed, covered with adpressed, silky hairs; other bracteoles hardly keeled, one-pointed and hairy mainly at the tips. Ovary 2mm long, thickly adpressed hairy, trilocular with axile placentation. Calyx tubular, 9mm long, sparsely hairy, two-pointed or lobed, split opposite the lobes, clear white. Corolla tube 30mm long, white at base to pale yellow distally; corolla lobes elliptic, 14–16 × 4–5mm, the laterals slightly larger than the dorsal, rolled back at anthesis. Lateral staminodes elliptic, 19–20 × 5mm, glandular hairy towards the throat, bright yellow. Lip obtriangular, 22 × 22mm, cleft from the distal margin for c.16mm towards the throat, the lobes spreading, irregularly truncate, glandular hairy towards the throat, bright yellow with clear honey guides and a pale throat. Style held in a groove in the corolla tube, white. Stigma a flattened cup, white. Filament 2.5–3.0mm long, pale yellow. Anther 5mm long, thecae parallel, fertile throughout their length, crest rounded,

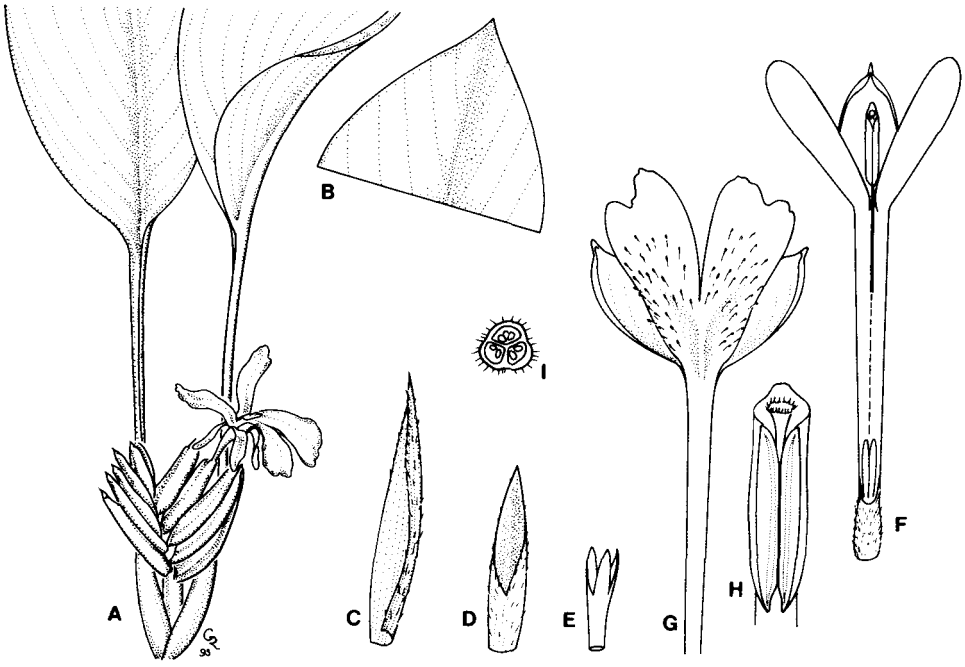

FIG. 1. A, flowering shoot (× ⅓); B, leaf apex (× ⅓); C, bract (× 1); D, bracteole (× 1); E, calyx (× 1); F, part of flower showing lateral staminodes, dorsal corolla lobe and anther; G, part of flower showing labellum and anterior corolla lobes; H, anther; I, cross-section of ovary (× 4).

1mm long, bright yellow. Stylodes linear, 4.5mm long, pale yellow. Fruit unknown. Chromosome number $2n = 26$. **Fig. 1**.

Type: Vietnam. Path from Suoi Trai hang to Khe ao, Bach ma National Park, Thua Thiên-Huê Province, in degraded primary forest, 100m alt., living material collected 7 ii 1990 and flowered in cultivation at Royal Botanic Garden Edinburgh July and August 1993, *M. Newman* 454 (dated 3 August 1993; holo. E).

Vernacular name: gung den (black ginger).

Distichochlamys citrea is one of very few species in the Hedychieae to have tubular bracteoles. Only in the monotypic, Sumatran genus *Nanochilus* and a few species of *Hedychium* has this character been observed before. While looking superficially like a *Scaphochlamys*, the limits of that genus would have to be stretched very far in order to include a species with distichous bracts and tubular bracteoles. Furthermore, *Scaphochlamys* has basal spurs on the anthers and has not been recorded north of the southernmost provinces of Thailand.

These differences and those from the other genera in the group are laid out in Table 1. The new species is as different from the existing genera as they are from each other. Moreover, the widening of the generic limits of *Scaphochlamys* to include this species would call into question the distinction between certain other pairs of genera in this group so I feel that there is justification for erecting a new genus.

The base chromosome number has been shown previously to be a useful character at generic rank in the Hedychieae (Newman & Jong, 1986; Newman, 1990) so root

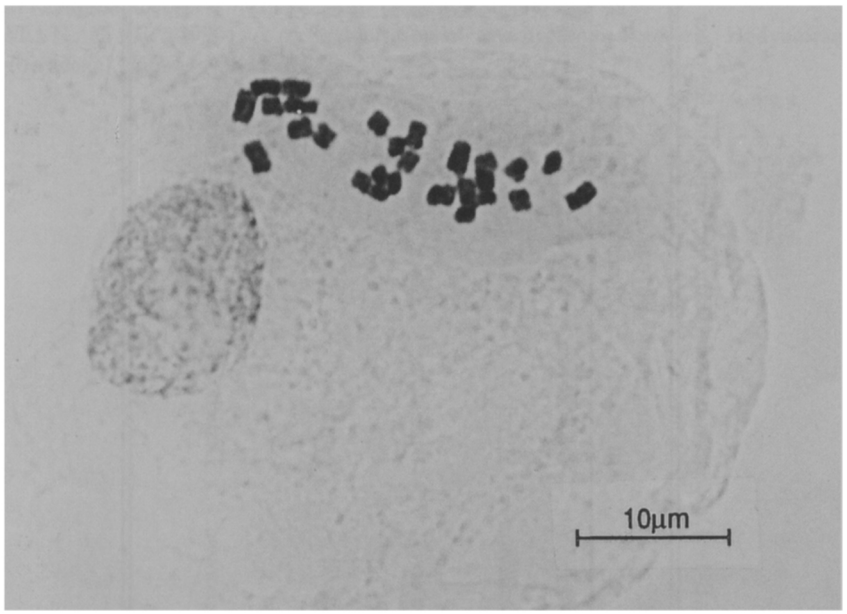

FIG. 2. Root tip metaphase. Scale bar = 10µm.

TABLE 1. Differences between *Distichochlamys* and the other genera in the group.

	Arrangement of bracts	Mode of flowering	Flowers	1st bracteole	Lip	Thecae	Chromosome number
Distichochlamys	Distichous	Base–apex	In cincinni	With two keels	Bilobed, not saccate	Spurs absent	$2n=26$
Scaphochlamys	Spiral	Base–apex	Usually in cincinni	Often more or less keeled, arising opposite bract	Bilobed or entire, never saccate	With very short, free, basal spurs	$2n=28$ $n=(13)14$
Boesenbergia	Distichous	Apex–base	Single	Boat-shaped, arising at right angle to bract	Usually saccate, rarely bilobed, never flat	Spurs absent	$2n=20$, 24, 36 $n=10$
Kaempferia	Spiral	Base–apex	Single	Deeply split, arising opposite bract	Deeply bilobed, often flat	Spurs absent	$2n=22$, 24, 33, 36, 44, 54 $n=1$, 16+1I, 17
Haplochorema	Distichous	Apex–base	Single	Boat-shaped or split, arising at right angle to bract	Bilobed or emarginate, flat	Spurs absent	Unknown

tip squashes of this species were made. Healthy-looking root tips were gathered at midday from the type plant, growing at the Royal Botanic Garden Edinburgh. After 24 hours in α-monobromonaphthalene in a refrigerator at c.5°C they were fixed in a freshly made mixture of 3 parts ethanol and 1 part acetic acid. Following fixation, the root tips were stained in Feulgen's reagent for 2 hours before squashing. On examination under an oil immersion lens, dividing root tip cells proved to have $2n = 26$ chromosomes. In many cells one of the chromosomes had a clearly visible satellite. The chromosomes are within the size range for the family and, as usual, they tend to be metacentric. Figure 2 shows a highly contracted root tip metaphase in which all 26 chromosomes can be seen. It is too contracted to show any SAT-chromosomes, however.

Bach ma National Park contains remnants of the Central Vietnamese rain forest, a very restricted forest type separated by a long distance from the main rain forest area of South-east Asia. *D. citrea* may occur only there; a thorough survey of the park and surrounding area would be well worthwhile, not just from the point of view of this species.

One of my Vietnamese guides told me that *D. citrea* is medicinal but I have not been able to find out what it is used for, nor why its Vietnamese name means 'black ginger' when no part of it seems to be black.

REFERENCES

NEWMAN, M. F. & JONG, K. (1986). Cytotaxonomic observations on *Mantisia wardii* (Zingiberaceae). *Notes Roy. Bot. Gard. Edinb.* 43: 493–496.

NEWMAN, M. F. (1990). A reconsideration of *Brachychilum* Petersen (Hedychieae: Zingiberaceae). *Edinb. J. Bot.* 47: 83–87.