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On the identity of *Euonymus pallidifolia* (Celastraceae)

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Glyptopetalum pallidifolium (Hayata) Q.R. Liu & S.Y. Meng, *comb. nova* (Celastraceae) is proposed here based on *Euonymus pallidifolia* Hayata from Pingtung Hsien, Taiwan. *Glyptopetalum* is a new generic record for Taiwan. The characters of capsule and flower of this species are described, and the difference between *Euonymus* and *Glyptopetalum* is discussed.

Glyptopetalum (Celastraceae) was described by Thwaites (1856) based on *G. zeylanicum*. According to Cheng and Ma (1999) the genus includes about 41 taxa distributed in the tropical and subtropical SE Asia, but only 20 taxa were accepted by Liu and Funston (2008). *Glyptopetalum* is morphologically closely allied to *Euonymus*: both have opposite leaves, a dehiscent capsule and a red carnous aril. However, *Glyptopetalum* has 4-merous flowers, 4-locular ovaries, pendulous ovules, one per locule only, a cracked or late-branched capsule, and a branched raphe. In *Euonymus* the flowers are 4-merous or 5-merous, and the ovaries 4-locular or 5-locular, the ovules are pendulous or not, 2–12 per locule, the capsule cracks late, and the raphe is not branched (Cheng *et al*. 1999, Ma *et al*. 2008).

Euonymus pallidifolius was recorded in *Flora of Taiwan* (Lu & Yang 1993). This species was described by Hayata (1913) based on a specimen collected by Nishigaki in Koshun, Taiwan. Hayata did not describe the flower, but described the capsule in detail, saying it was "3-locularis, loculis 1-spermis, 3–4 striata apice arillis rubris coronata". However, Blakelock (1951) excluded the species from *Euonymus* just because its capsules are 3-locular. Li (1977) and Lu and Yang (1993) recognized it in *Euonymus*, and Cheng *et al*. (1999) placed it in *Euonymus* sect. *Euonymus* subsect. *Euonymus* ser. *Pseudovyenomi*. Ma (2001) transferred it to *Euonymus* sect. *Ilicifolia*, stating that this species was closely related to *E. tonkinensis*, but differed from the latter in having larger leaves and bigger capsules. Ma and Funston (2008) also held the same view. Thus, the systematic position of this species has been very unclear and it "is in need of further work because there are very few specimens available."(Ma & Funston 2008).

When working with *Glyptopetalum* we observed that the capsule was subglobose, and the seeds had 3–4 stripes (Fig. 1; Lu & Yang 1993: pl. 334-8) after carefully examining the holotype of *E. pallidifolius* and the original literature. We dissected the capsule from a specimen in IBSC, collected in Pingtung Hsien, Taiwan, and confirmed that the stripes mentioned in the original literature were the same as the raphe in *Glyptopetalum*. This is one of the most important characteristics that separates *Glyptopetalum*

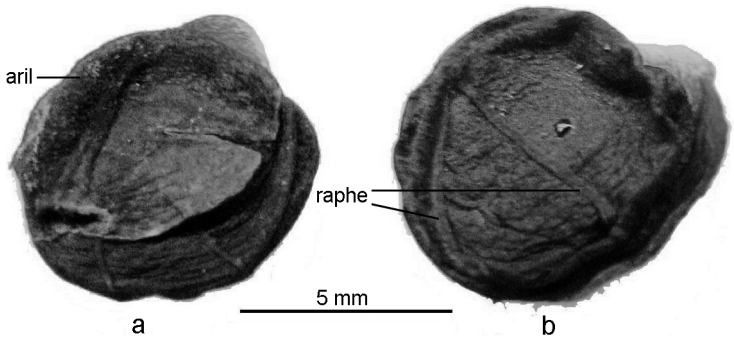

Fig. 1. Seeds of *Glyptopetalum pallidifolium* (*C. M. Wang 03439*, IBSC). — **a**: Aril at the base of seed. — **b**: Branched raphe.

from *Euonymus*. Based on the examined specimens and literature (Hayata 1913, Blakelock 1951, Lu & Yang 1993), it can be confirmed that it has 4-locular ovaries, with the ovules pendulous and one per locule. Because of limited specimen material, we do not know the detailed structure of the flower. However, according to the line illustration (Lu & Yang 1993: pl. 334), it has 4-merous flowers, and the ovary is immersed in the disk. It is therefore clear that this species belongs to *Glyptopetalum*, not to *Euonymus*.

Glyptopetalum pallidifolium (Hayata) Q.R. Liu & S.Y. Meng, *comb. nova*

Basionym: *Euonymus pallidifolia* Hayata, Ic. Pl. Form. 3: 57. 1913. — Holotype: China. Taiwan, Pingtung, Koshun, 11.I.1910 *Nishigaki 01385* (photo TI!).

Evergreen shrubs, branchlets yellowish or pallid, terete. Leaves opposite, pale yellowish when dry, oblong or broadly elliptic, 5–7.5 cm long, 2.3–4 cm wide, coriaceous, acute or obtuse at apex, cuneate or rounded at base, glabrous, margin entire and revolute; veins and veinlets slim and invisible, 5–6 pairs; petioles 4–8 mm long. Inflorescences axillary, cymose, 2 × dichotomous, usually with less than three flowers; pedicel about 3 mm long. Flowers bisexual, 4-merous; sepals nearly round, ca. 5 mm in diam. When open, petals greenish or whitish. Disk fleshy; stamens on disk. Ovary immersed in disk, 4-locular; ovules pendulous, 1 per locule. Capsule subglobose, green or yellow, sometimes with shallow grooves; smooth, about 1.5 cm across, 7 mm long; 3–4 locules, locule 1-seeded. Seeds 2–4, rounded, basal 1/3 covered with aril. Raphe 3–4 branched. Flowering March to June, fruiting August to November.

Distribution: China (Pingtung Hsien, Taiwan), alt. 0–200 m, mainly in shore bushes at or near sea level; rare.

Specimens examined: — **China**. Taiwan, Pingtung Hsien, Hengchun Town, Kengting Park, *C. M. Wang 03439* (IBSC); Mangchou Town, Kengting Park, *T. Y. A. Yang 07881* (KUN); Lilongshan, *T. Y. Yang 1239* (photo, TAI); *Y. F. Chen 9057* (photo, TAI); *C. M. Kuo 14266* (photo, TAI); Kuangshan, *S. Y. Lu 18186* (photo, TAIF); Kuangshan, *S. Y. Lu 5667* (photo, TAIF); Nanjenshan, *T. Y. A. Yang et al. 07881* (photo, HAST); Shihtzu Hsiang, Shouka, *Y. C. Kao 795* (photo, HAST); *H. F. Yen 63731* (photo, HAST); Kuangshan, *S. Y. Lu 69346* (photo, HAST); Shouka, *Y. C. Kao 78780* (photo, HAST); Kuangshan, *S. Y. Lu 59364* (photo, HAST).

Glyptopetalum pallidifolium is similar to *G. fengii*, but the former can be distinguished easily by its larger leaves (5–7.5 cm long *vs*. 3–4 cm long, 2.3–4 cm wide *vs*. 1.5–2 cm wide), sometimes 3-verticillate leaves and different flowering time and some flower characters (flowering in March to June, flower ca. 5 mm in diam, filament shorter than style *vs*. flowering in December, flower ca. 6–8 mm in diam, filament longer than style). *Glyptopetalum pallidifolium* is endemic in south Taiwan.

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