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Research Article

Artabotrys suaveolens (Blume) Blume (Annonaceae), a new record of a medicinal plant species for Vietnam

Ngoc-Sam Ly[1,2,*], Ngoc-Giang Cao[3], Xuan-Truong Nguyen[3], Thi-Lien Tran[3], Thi-Minh-Huyen Ngo[3], Hong-Dung Pham[4], Van-Long Ha[4]

[1]Institute of Tropical Biology, Vietnam Academy of Science and Technology (VAST), 85 Tran Quoc Toan, District 3, Ho Chi Minh City, Vietnam. *Corresponding author's e-mail: **lysamitb@gmail.com**
[2]Graduate University of Science and Technology, VAST, 18 Hoang Quoc Viet, Cau Giay, Ha Noi
[3]National Institute of Medicinal Materials, 3B Quang Trung, Hoang Kiem District, Ha Noi
[4]Phu Quoc National Park, N°.1 Nguyen Chi Thanh, Duong Dong Town, Phu Quoc District, Kien Giang Province

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Abstract

Artabotrys suaveolens, is here reported for the first time from Phu Quoc National Park, Kien Giang province, southwestern Vietnam. It was previously known as a native species from India, Bangladesh, Myanmar, Malaysia, Singapore, Brunei, Indonesia, Philippines and Thailand. A detailed description along with a coloured plate, data on distribution, habitat, phenology, and notes on this species are given.

INTRODUCTION

Artabotrys R. Br. is one of the species-rich genera in Annonaceae, with more than 100 species mainly distributed in tropical Africa and Eastern Asia (Keßler, 1993, Mabberley, 2008; Tan and Wiart, 2014; Guo *et al.*, 2017). This genus easily distinguished from other genera of Annonaceae by the flattened hooks at the base of peduncle and its climbing habit (Keßler,1993). The comprehensively taxonomic and systematic studies of this genus in Vietnam have been well known. In an illustrated Flora of Vietnam, Ho (2000) reported 10 species of *Artabotrys*, namely *Artabotrys aeneus* Ast, *A. brevipes* Craib, *A. fragrans* Ast, *A. harmandii* Finet & Gagnep., *A. hexapetalus* (L.f.) Bhandari, *A. honkongensis* Hance, *A. intermedius* Hassk., *A. pallens* Ast, *A. petelotii* Merr., *A. vinhensis* Ast. As the same time, Bân (2000) recorded 15 species for Vietnam in his family revision of Annonaceae, with the same species of *Artabotrys* as those mentioned by Ho (2000), plus described five new species for Vietnam, namely A. *hienianus* Bân, A. *phuongianus* Bân, A. *taynguyenensis* Bân, A. *tetramerus* Bân, A. *vietnamensis* Bân. However, *Artabotrys intermedius* Hassk. is recently reduced as a synonym of A. *hexapetalus* (L.f.) Bhandari (Turner, 2018).

During the medicinal plant investigations in Southwestern Vietnam in 2018–2019, several interesting plants of *Artabotrys* were found and collected in Phú Quốc National Park, Kiên Giang province by the authors. A critical examination of these specimens and a comparison with type material and protologues of presumed closely related species (e.g. Finet and Gagnepain, 1906; Sinclair, 1955; Pham, 2000; Bân, 2000; Chalermglin, 2005; Li and Gilbert, 2011; Turtern, 2012) provided evidence for that those plants have been identified as *Artabotrys suaveolens* (Blume) Blume, a widely distributed species previous reported in India, Bangladesh, Myanmar, Malaysia, Singapore, Brunei, Indonesia, Philippines and Thailand (Chalermglin, 2005; Prabhu *et al.*, 2015; Turner, 2018).

Therefore, we here report *A. suaveolens* as a new record for the flora of Vietnam and provide a description, a color photographs and distribution map of this species based on our collections.

MATERIALS AND METHODS

The morphological description of *Artabotrys suaveolens* is based on the living materials found in Phu Quoc NP, Kien Giang province, supplemented with herbarium material of Southeast Asian *Artabotrys* from the following herbaria: HN, NY, P and VNM as well as digitized specimen images of this genus available on the web from JSTOR Global Plants (http://plants.jstor.org). Material was preserved in 70% ethanol and stored at VNM (Ho Chi Minh City) and NIMM (Ha Noi) herbaria. All the photos were taken with a Canon 77D fitted with an EF-S 60mm f/2.8 Macro USM lens. Morphological characters were studied under dissecting microscopes and are described using the terminology presented by Beentje (2012).

RESULT AND DISCUSSION

***Artabotrys suaveolens* (Blume) Blume**, Fl. Jav Anon. 2. T.30: 62.1830; Miquel, Fl. Ned. Ind. 39.1895; Hook. f. & Thoms., Fl. Brit. Ind. 1: 55.1875; Kurz in Forest Fl. Burma 1: 32. 1877; King, Jour. As. Soc. Beng. 61, 2: 36-37.1893; Ridley, Fl. Malay. Penin. 1: 42.1922; Craib, Fl. Siam Enum. 1:35. 1925; Sinclair, Gard. Bull. Sing.14, 2: 256–258. 1955; Backer & Bakhuizen van den Brink Jr., Fl. Java. 1: 114.1963. Kessler & Heusden, Rhedeea 3: 55. 1993. – Type: Griffith 429, Malay Peninsula, Malacca (NY, digital image).

Synonym

The species has been mentioned under different synonyms as *Unona corniculata* Blanco, Fl. Filip. 469. 1837; *U. suaveolens* Blume, Bijdr. 17. 1825. *Artabotrys corniculatus* (Blanco) Merr., Sp. Blancoan. 150. 1918; *Artabotrys monogynus* Merr., Philipp. J. Sci. 14: 383. 1919; *A. parviflorus* Miq., Fl. Ned. Ind., Eerste Bijv. 375. 1860; *A. rolfei* S.Vidal, Revis. Pl. Vasc. Filip. 39. 1886; *A. suaveolens* var. *parviflorus* (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 2: 11. 1865; *A. trigynus* Merr., J. Straits Branch Roy. Asiat. Soc. 85: 177. 1922.

Large woody climber. Twigs drying red-brown, somewhat adpressed pubescent; older twigs sparsely pubescent, longitudinally striate, becoming grey-brown with many small raised pale lenticels. Young buds covered in brown hairs. Petioles green and drying dark brown or blackish, (2–)3–5 mm long, 1–1.5 mm in diameter, channeled above, sometimes with small bumps, sparsely pubescent. Leaves simple, alternate, elliptic to oblong-elliptic, 3.2–6.6(–7.1) × (2–)2.2– 3.8 cm, dark green, glossy on both surfaces, chartaceous to pergamentaceous, drying a warm chestnut brown, sometimes more grey-brown beneath with darker brown main nerves, glabrous except for adpressed pubescent on the below midrib; apex acute to acuminate, base acute to attenuate; midrib and lateral nerves slightly raised on both surfaces; lateral nerves 6–9 pairs per leaf, prominent at above side, anastomosing, 3-4 mm to the margin, reticulations forming a very loose network, inconspicuous visible on both surfaces. Inflorescence hooks, recurved, laterally compressed, with 3-5 or many flowers; peduncle terete/sub terete, pubescent; bract lanceolate, 1–1.2 × ca. 0.5 mm, sparsely pubescent outside, glabrous inside; flower bud broadly ovoid, ca. 2 × 1.5 mm, pubescent. Flowers 2–2.2 cm long, white to cream-white, fragrant; flowering pedicels slender, 7–8 mm long, ca. 1 mm in diam., pubescent. Sepals 3, valvate, fleshy, triangular ovate, 2.5–3 × 3–3.2 mm, green, glabrous inside, pubescent outside, apex short acuminate. Petals 6 in two whorls of three, fleshy, 1–1.2 cm long, densely minute tomentose; claws orbicular, outer ones 2.5–3 × 4.1–4.5 mm, inner ones slightly smaller, 2.8–3 × ca. 3 mm, glabrous inside; limbs cylindric to clavate, terete, thick, 8–10 × ca. 1 mm, slightly incurved, apex obtuse. Stamens 10–20, oblong, 0.8–1 mm long, 0.4–0.6 mm wide, scarcely any filament, apex of connectives apex flat/discoid, minutely tomentose. Torus flat, 2.5–3 mm in diam., glabrescent. Carpels 3–4 per flower, ca. 1 mm long, ca. 1 mm wide; ovaries broadly ovoid, 0.4–0.5 × 0.5–0.6 mm, pale green, glabrous; style linear, 0.2–0.3 mm long, bent at the rather flattened; stigmas 2-lobed, tongue-shaped and flat, white, woolly, boundary of carpel to stigma prominent; ovule 2, basal placentation. *Monocarps* 1–2, ellipsoid, sessile, 0.9–1.2 cm long, 0.6–0.8 cm wide, apex obtuse to rounded, pericarp thin, fleshy; seed 1–2, plano-convex, ellipsoid, blunt at both ends, the testa granular.

Phenology: Flowering in July and fruiting from May to October.

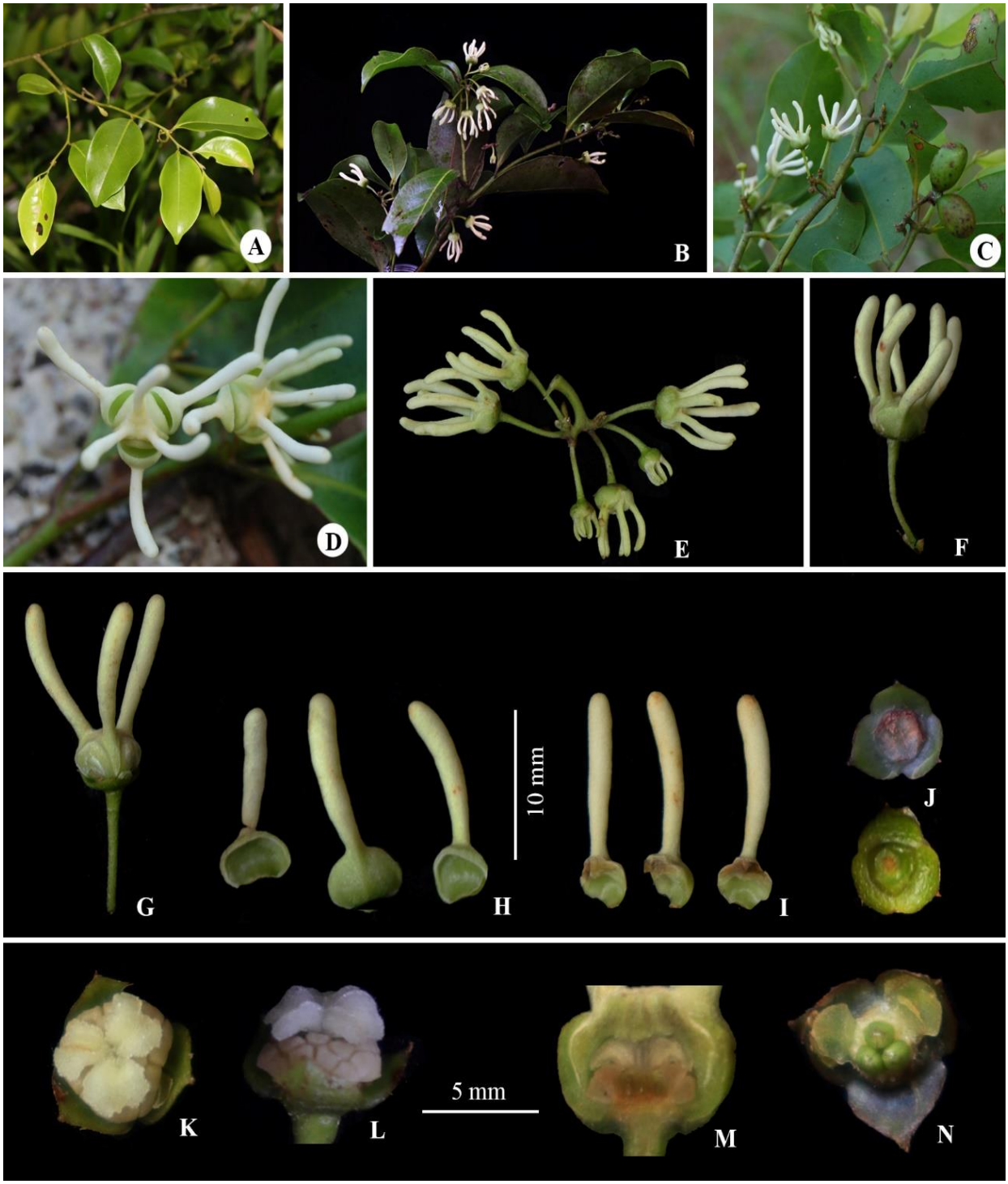

Figure 1. *Artabotrys suaveolens*. **A**. Young twists; **B**. Mature branches with inflorescence; **C**. Inflorescence and infructescence; **D**. Close-up of flower; **E**. Inflorescence detail; **F**. Close-up of flower; **G**. Flower with inner petals; **H**. Outer petals; **I**. Inner petals; **J**. Outer (lower) and inner (upper) surfaces of sepals; **K**. Stamens and stigmas (top view); **L**. Stamens and stigmas (side view); **M**. Cross-section of flower; **N**. Young carpels and sepals (top view). Pictures A–B and E–N and the coloured plate prepared by Ly Ngoc Sam; pictures C-D photographed by Ha Van Long.

Distribution: This species is very common and widely spread, from India to Malay Peninsula, Sumatra, Java, Borneo, Celebes, Philippines, Moluccas, New Guinea and Vietnam (Phu Quoc Island, Kien Giang Province).

Habitat and ecology: This species found in primary tropical evergreen forests on moist places and open areas.

Specimens examined: Vietnam. Kin Giang province, Phu Quoc District, Phu Quoc NP, alone the trek to the summit 565, 10°20'50.02"N, 104° 3'35.12"E, 210 m elev., 11 July 2019, *Cao Ngoc Giang, Ngo Thi Minh Huyen, Hà Văn Long, TNB-401* (VNM, NIMM), TNB-402 (NIMM!); the same locality, 10°20'51.46"N, 104° 3'34.24"E, 214 m elev., 22 May 2019, *Ly Ngoc Sam, Cao Ngoc Giang, Ha Van Long, TNB 397* (VNM, NIMM); the same locality; 10°20'47.09"N, 104° 3'39.42"E, 208 m elev., 28 April 2019, Tran Thi Lien, Ngo Xuan Truong, Ha Van Long, *TNB-392* (NIMM).

Uses: According to Tan and Wiart (2014), the leaves of *A. suaveolens* are used for treatment of Cholera (India and Indonesia (Java)) and enlarged spleen (Phillipines) while its roots and bark are used as emmenagogue, and to relieve fatigue after childbirth (Phillipines).

Notes: *Artabotrys suaveolens* is originally described from Malacca, Malay Peninsula (Blume, 1830). It is distributed from India to Malay Peninsula, Sumatra, Java, Borneo, Celebes, Philippines, Moluccas, New Guinea. This species is mainly distinguished by the terete of outer petals. It has some variation in form throughout its geographical distribution which was described as separated species such as *A. parviflorus* Miq. (Miquel, 1861) from Sumatra, *A. rolfei* S. Vidal (Vidal, 1886), *A. corniculatus* (Blanco) Merr. (Merill, 1918) and *A. monogynus* Merr. (Merrill, 1919) from the Philippines, and *A. trigynus* Merr. from Sabah (Merrill, 1922). The taxa are recently treated as synonyms of *A. suaveolens* (Turner, 2012, 2018).

Artabotrys suaveolens is similar to *A. sarawakensis* I.M. Turner in general vegetative characters and flower form with the triangular sepals, the blades of both petal whorls relatively narrow and not flat in cross section but the leaves are ovate-elliptic shaped with lateral veins 9–12 pairs, the flowering pedicels are 5–8 mm long and glabrous or brown tomentose, the petals are white or pink/red turning pale creamy yellow with its claw is covered with short dense pale adpressed hairs and the petal blades are 8–11 mm long and glabrescent, which make it easy to distinguish from the later species by having the leaves are elliptic to oblong-elliptic with lateral nerves 8–9 pairs, the flowering pedicels are 17–23 mm long and glabrous, the petals are yellow with its claw is densely covered in pale straw-coloured hairs on both surfaces and the petal blades are 12–15 mm long and densely and regularly tomentose.

In general, these plants from Phu Quoc Island, Southwestern Vietnam fit Blume's description. This study is firstly reported *Artabotrys suaveolens* for the flora of Vietnam and increases a total number of *Artabotrys* species to fifteen.

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