

НОВЫЕ ТАКСОНЫ

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HIEPIA CORYMBOSA – NEW GENUS OF APOCYNACEAE (ASCLEPIADOIDEAE) FROM VIETNAM

HIEPIA CORYMBOSA – НОВЫЙ РОД СЕМЕЙСТВА АПОСЫНАСЕАЕ (ASCLEPIADOIDEAE) ИЗ ВЬЕТНАМА

Summary. A new genus and species – *Hiepia corymbosa* (Apocynaceae, *Asclepiadoideae*) discovered in Quang Binh and Quang Tri provinces of central Vietnam is described and illustrated. The morphological characters of discovered new genus and related genera *Dischidia* and *Hoya* are compared. From both mentioned genera, the described plant differs in revolute petals, flat corymbiform inflorescence, not spreading corona lobes and in very long filiform pollinaria translators.

Key words: *Hiepia corymbosa*, new genus and species, Apocynaceae, flora of Vietnam, higher plant taxonomy, biological diversity.

Аннотация. В статье дается иллюстрированное описание нового рода и вида семейства Аросунасеае (*Asclepiadoideae*) – *Hiepia corymbosa*, найденного в провинциях Кунгбинь и Куангчи Центрального Вьетнама. Приводится детальное морфологическое сравнение нового рода с близкими родами *Dischidia* и *Hoya*. От указанных родов описываемое растение отличается отогнутыми лепестками (образующими обратно обращенную урночку), плоским щитковидным соцветием, внутрь (адаксиально) обращенными (не распростертыми) долями короны и нитевидными трансляторами поллиариев. Необычное строение поллиариев, характеризующееся наличием нитевидных трансляторов, значительно превышающих по длине поллинии, уникально для описываемого рода и не встречается у представителей ближайших родов подсемейства.

Ключевые слова: *Hiepia corymbosa*, новый род и вид, Аросунасеае, флора Вьетнама, таксономия высших растений, биологическое разнообразие.

INTRODUCTION

The subfamily *Asclepiadoideae* (Apocynaceae) comprises 250 genera with over 2000 species widespread in tropical and subtropical regions with highest diversity in Africa and in the south of South America. Subfamily has also well representation in northern and southeastern Asia (Li et al., 1995). In Vietnam 48 genera with 122 species of this subfamily were listed until now (Tran The Bach, 2005).

During our recent plant collecting fieldwork in central Vietnam, some unusual specimens of *As-*

clepiadoideae were discovered. Detailed study of collected plant revealed obvious fact that it does not fit any presently known asclepioid genera having, nevertheless, obvious relation to *Dischidia* R. Br. and *Hoya* R. Br. well presented in the flora of Vietnam by 12 and 18 species respectively (Ho, 2003; Tran The Bach, 2005; Livshultz et al., 2005). Phylogenetically, the studied plant can be tentatively placed near mentioned genera on the base of comparative analysis of floral and vegetative morphology. However, some specific features give clear evidence that the novelty cannot belong to *Dischidia*, *Hoya* or any

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other genera known in Indochina. Hence, we propose description of the discovered plant in the rank of separate genus.

***Hiepia* V.T. Pham et Aver., gen. nov.**

Type: *Hiepia corymbosa* V.T. Pham et Aver.

Monotype genus endemic to lowlands of Quang Binh and Quang Tri provinces of Central Vietnam.

***Hiepia corymbosa* V.T. Pham et Aver. sp. nov.**

Type: [Central Vietnam] “Quang Tri prov., Da Krong distr., Ta Rut municipality, A Pul village, around point 16°24'29"N, 107°01'07"E, broad-leaved evergreen forest along rocky river canyon composed with shale and sandstone at elev. about 300 m a.s.l. 10 May 2011, L. Averyanov, P.K. Loc, N.Q. Hieu, P.V. The, N.T. Vinh. CPC 3066” (holotype – CPC¹ Herbarium; isotype – LE).

Planta epiphytica, semiarborea, liana vel suffrutex, latice albo. Caulis procumbens vel ascendens, ramosus, ad 1.5 m longus. Folia elliptica, 6–9 cm longa, 2–3.5 cm lata, acuminata, coriacea. Inflorescentiae 1–2 axillares, multiflorae, corymbosae. Sepala dilute viridia vel lutescentia, 1 mm longa, 0.7 mm lata. Petala tertia parte connata, ovata, aurantiaca vel aurantiaco-rosea, ca 2.5 mm longa, 1.2–1.4 mm lata, revoluta. Corona discoidea, 0.8–0.9 mm alta, 1.6–1.8 mm in diametro, roseola vel pallide aurantiaca. Coronae lobi erecti, lunati, 0.8–1 mm longi, acuti, incurvi. Gynostegium discoideum, corona inclusum. Massae pollinis duae, valde remotae (filamentis conjunctivis 0.15–0.2 mm longis). Ovaria 2, libera, superiora.

Epiphytic semi-woody vine or undershrub with white latex. Stems pendent to ascending, branched, up to 1.5 m long, young part light green, light brown when mature, terete, to 6 mm in diam., with distinctly swollen nodes. Leaves opposite, petiolate. Petiole straight, 3–4 mm long, 2.5 mm in diam., terete, dark green. Leaf blade elliptic, 6–9 cm long, 2–3.5 cm wide, rounded at the base, acuminate, with entire slightly revolute margin, coriaceous, with midrib prominent on lower surface, and with 4–6 arching lateral veins, light green, glossy above, very light dull green, almost white below. Inflorescences 1–2 axillary corymbs in each leaf axil, each corymb with 11–16 flowers; peduncle terete, swollen at apex and at the base, 0.5–1.7 cm long, 1–1.5 mm in diam., pale green; pedicels white, sometime with light purple tint, arching, 6 mm long, about 0.7 mm in diam. Floral bracts very small, triangular, acute,

0.5–0.7 mm long, 0.3–0.5 mm broad at the base. Calyx of 5 sepals joined at base, sepals light green to yellowish, finely warty outside, rough inside, ovate, 1 mm long, 0.7 mm wide, finely erose along margin, at base thick and lumpy, apex rounded, thin. Corolla of 5 petals, about 5 mm in diam.; petals united into 1/3 of their length from the base, ovate, orange to orange-pink, about 2.5 mm long, 1.2–1.4 mm wide, back-recurved, velvety hairy inside, outside glossy, apex acute or obtuse and slightly erose, helicoidally revolute. Corona (crown) of 5 lobes, discoid, adnate to corolla, 0.8–0.9 mm tall, 1.6–1.8 mm in diam., pinkish, yellow-pink or light orange, white in center; corona lobes glossy, pinkish, yellow-pink or orange, broadly lunate, 0.8–1 mm long, about 0.5 mm high (from side view), free, adnate at the base, with acute, erect, incurved apex. Gynostegium discoid, inserted into corona. Anther appendage keeled, triangular, acute, yellow-pink, higher than corona lobes, with apical membrane covering stigma head. Each pollinarium composed with corpusculum, 2 long, filiform translators, very small caudicles and 2 pollinia. Corpusculum black-brown, V-shaped, bilobed, rounded at tips, about 0.01 mm long and 0.005 mm wide. Translators filiform, 0.15–0.2 mm long, transparent and elastic, one tip attached to one lobe of corpusculum, other tip attached to pollinium with much broadening caudicle. Pollinia ovoid, 0.1–0.15 mm in diam., golden-yellow, germinating crest light yellow, in form of tall ridge coming from caudicle to apex of pollinium. Ovaries 2, free, superior (black-brown when dry), pyramidal, about 0.5 mm tall, 0.2–0.3 mm wide, extended apically into stylar head. Ripe fruits unknown.

Paratypes: Quang Binh prov., Minh Hoa distr., Thuong Hoa municipality, around point 17°41'28"N, 105°53'42.7"E. Wet primary evergreen broad-leaved forest on shady humid clay slope of narrow stream canyon composed with solid crystalline limestone at elevation about 460 m a.s.l. 4 August 2011 N.T. Hiep, L. Averyanov, N.S. Khang, N.Q. Vinh, N.V. Tap, P.V. The, L.T. Kien. CPC 3894a (CPC Herbarium, LE).

Etymology. Genus is named after distinguished Vietnamese botanist, outstanding organizer of exploration field works in Indochina, Director of the “Center for Plant Conservation” (Vietnam Union of Science and Technology Associations), Dr. Nguyen Tien Hiep. Species name refers characteristic corimbiform inflorescence of described plant.

Phenology. Described plant flowers in April – May, and develops fruits in August – September with seed maturing after rainy season.

¹ Center for Plant Conservation (Hanoi).

Table

Diagnostic discriminative morphological characters of *Dischidia*, *Hoya* and *Hiepia*

Characters	<i>Dischidia</i>	<i>Hoya</i>	<i>Hiepia</i>
Inflorescence			
Type of inflorescence	Solitary flowers to many flowered spherical umbel	Subspherical many flowered umbel	Flat many flowered corymb
Corolla			
Corolla size and shape	Small, urceolate	Large, rotate	Small, inversely urceolate
Corolla lobe size	Minute to rudimentary	Large	Minute
Corolla lobes character	Erect, straight or hardly reflexed	Straight, strongly reflexed	Helicoidally revolute
Corolla hairiness	Glabrous to long hairy	Glabrous to short hairy	Shortly velvety hairy
Corona and gynostegium	Accessible by narrow corolla throat	Completely exposed	Completely exposed
Corona lobes			
Consistence	Thin, inconspicuous or rudimentary	Fleshy, inflated	Thin, lunate
Connection with gynostegium	Inserted into gynostegium	Adnate at the base	Adnate at the base
Orientation	Erect or ascending	Stellary spreading	Ascending
Apex	Entire, notched to bifid	Entire	Entire
Surface when dry	mat	glossy	mat
Apical membrane of anthers			
Connection with stigma head	Overlying above stigma head	Adressed to stigma head	Overlying above stigma head
Pollinarium			
Translators (caudicles)	Broadly lamellate, rigid (commonly as long as pollinium)	Shortly cylindrical (much shorter than pollinium), rigid	Long, filiform (much longer than pollinium), elastic
Corpusculum	Entire, not bilobed	Entire, not bilobed	V-shaped, bilobed

Ecology. *Hiepia corymbosa* was observed as a humus or bark epiphyte on old mossy trees in primary broad-leaved evergreen forests along rocky river canyons composed with shale, sandstone and solid crystalline highly eroded limestone at elevation 300–500 m a.s.l. Samples of this plant were found in tree canopies along stream just along water line. Plants commonly settle down in forks of tree branches in more or less sunny places. The species of *Aglaia*, *Antidesma*, *Artocarpus*, *Baccaurea*, *Cannarium*, *Cryptocarya*, *Diospyros*, *Dipterocarpus*, *Dracontomelum*, *Dysoxylon*, *Elaeocarpus*, *Eri-manthus*, *Ficus*, *Litsea*, *Manglietia*, *Michelia*, *Phoebe*, *Pometia*, *Sloanea*, *Sterculia*, *Stixis*, *Streblus*, *Syzygium* were observed as the most common trees in habitats of *H. corymbosa* as well as numerous palms, mainly *Arenga caudatum*, *A. westerhoutii*, *Rhapis excelsa* and species of *Caryota* and *Pinanga*. Some epiphytic ferns and orchids were observed as usual associates growing together with *Hiepia corymbosa*. Among such species most common are *Bulbophyllum delitescens*, *B. longiflorum*, *Dendrobium terminale*, *D. truncatum*, *Kingidium deliciosum*, *Lemmaphyllum microphyllum*, *Phalaenopsis man-nii*, *Pomatocalpa spicatum*, *Pyrrosia lanceolata* and

Thrixspermum centipeda. Among strict Vietnamese endemics found in habitats of newly discovered genus, *Epipactis atromarginata*, *Eria thao*, *Ixodonerium annamense*, *Micropera poilanei* and *Pteroceras simondianum* should be mentioned.

Distribution. *Hiepia corymbosa* commonly inhabits lowland rocky river valleys composed with shale, sandstone and limestone in Quang Binh (Minh Hoa district, Thuong Hoa municipality) and Quang Tri provinces (Da Krong district, Ta Rut municipality) of central Vietnam growing at elevation 300–500 m a.s.l. Most probably, discovered plant represents the pattern of strict endemism typical for highly endangered lowland aboriginal floras of Central Vietnam.

IUCN Red List category. *Hiepia corymbosa* is local Vietnamese endemic, which inhabits very limited areas in Quang Binh and Quang Tri provinces in central part of the country. Both known localities are currently endangered due to deforestation and human land exploitation. The species is certainly very rare and actually is known only from two populations with less than 10 observed mature individuals. Typical habitat areas extend along narrow river valleys with total land occupancy not more

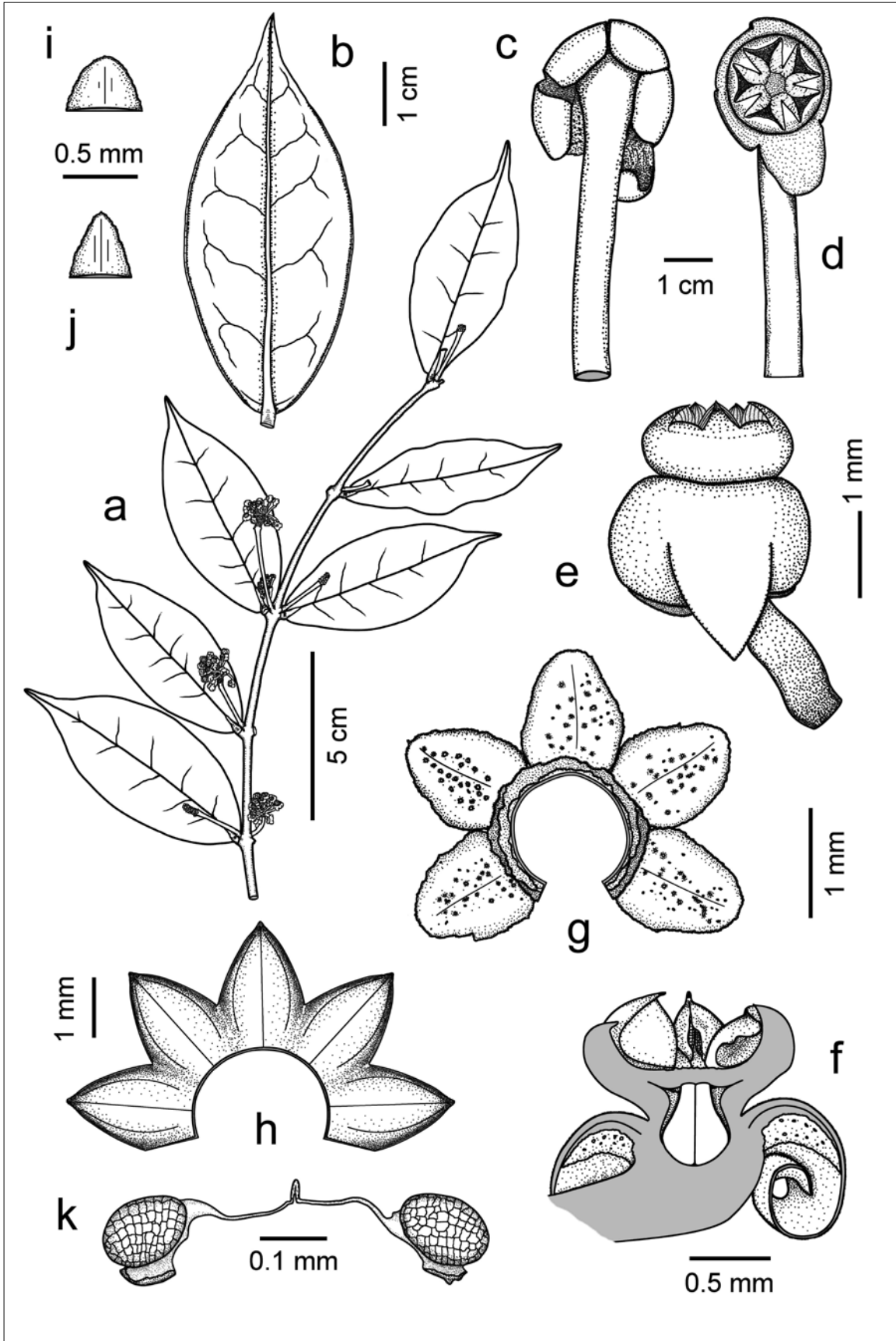


Fig. 1. *Hiepia corymbosa*. a – upper portion of flowering shoot, b – leaf, lower surface, c, d – flowers, view from behind and frontal view, e – open flower, side view, f – sagittal section of open flower, side view, g – flattened calyx, view from below, h – flattened corolla, view from below, i, j – floral bracts, k – pollinarium (all drawn by authors from type specimen – CPC 3066).



Fig. 2. *Hiepia corymbosa*. Digital epitype (d-EXSICCATES OF VIETNAMESE FLORA 0188/CPC 3066).

than 2–3 km². Vegetation supported known populations is highly depressed by anthropogenic activity and can be destroyed in the near future. According to accepted criteria (IUCN, 2010, version 8.1), *H. corymbosa* should be treated as critically endangered species and genus (CR) approaching full extinction in the nature.

Note. Morphologically, *Hiepia corymbosa* superficially resembles some representatives of *Hoya* and *Dischidia*. Common features of all three genera are epiphytic habit; succulent or leathery leaves; axillary, long living inflorescences with flowers approximated on very short apical rachis; valvate corolla lobes; pentafid corona, discoid gynostegium and stigma head; filaments connate with gynostegium; anther appendages covering stigma head; pollinaria with 2 pollinia, connected with translators to bifid corpusculum; pollinia granular united into massulae (poliades). At the same time, our plant strikingly differs from all known species of both mentioned genera mainly in revolute petals, flat corymbiform inflorescence, not stellary spreading corona and very long filiform translators.

Principal diagnostic discriminative morphological characters of mentioned genera are presented in the following Table.

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