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Critical notes on *Spiradiclis purpureocaerulea* H. S. Lo (Rubiaceae) from Vietnam

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ABSTRACT

Based on a careful examination of the voucher specimens, the newly recorded *Spiradiclis purpureocaerulea* H. S. Lo from Vietnam was confirmed to be a misidentification of *S. coccinea* H. S. Lo. Coincidentally, *Spiradiclis coccinea* is a species previously known only from China, and represents a new record for the flora of Vietnam. True specimens of *S. purpureocaerulea* were collected by the authors in Thanh Hua Province (Vietnam) in 2017. Therefore, we report *S. coccinea* and *S. purpureocaerulea* as new records for the flora of Vietnam here. Detailed descriptions and color photographs of the two species and a key to the five species of *Spiradiclis* in Vietnam are also provided.

KEY WORDS

Misidentification,  
Vietnam,  
new records.

MOTS CLÉS

mauvaise identification,  
Viêt-Nam,  
signalements nouveaux.
INTRODUCTION

The genus *Spiradiclis* Blume is a poorly known, taxonomically complicated genus distributed in tropical and subtropical regions of Asia (Lo et al. 1983; Lo 1999; Wang 2002; Chen & Taylor 2011; Wang et al. 2015; POWO 2019). It comprises approximately 54 species worldwide and most representatives are herbs occurring in limestone areas (Wang 2002; Chen & Taylor 2011; Wen et al. 2019; Wu et al. 2019). In Vietnam, this genus was traditionally represented by only two species, i.e. *Spiradiclis caespitosa* Blume and *S. leptobotrya* Pit. (Pitard 1923; Hô 2000; Deng 2014).

Recently, Lee et al. (2019) reported two new records of *Spiradiclis* for the flora of Vietnam, i.e. *S. hainanensis* H. S. Lo and *S. purpureocaerulea* H. S. Lo, both of which were previously thought of as endemic to China (Chen & Taylor 2011). However, we found that the description of *S. purpureocaerulea* in Lee et al. (2019) was not consistent with the plant depicted in Figure 3 of their article. The indumentum on most portions of the plant was described as densely pubescent, but the color pictures showed that the plant is glabrous or subglabrous. The description of the leaf shape was also conflicting with that in Figure 3A. Thus, we consulted the collector of the only cited collection (N. S. Khang 708) of this species, Dr N. S. Khang, and with his kind help, we examined the specimen kept in HN. After a careful specimen comparison, we found that this collection, identified as *Spiradiclis purpureocaerulea*, was very different from the type specimen (Fig. 2), and that many characters, especially the indumentum and leaf blade shape, match *S. coccinea* H. S. Lo (Fig. 3). Thus, we drew the conclusion that the specimen N. S. Khang 708 belongs to *S. coccinea*. Coincidentally, *Spiradiclis coccinea* is a species previously only known from China and never reported from Vietnam before.

We also collected true specimens of *S. purpureocaerulea* during a field trip toThan Hoa Province (Vietnam) in 2017. Therefore, we report two new records for the flora of Vietnam here. Detailed descriptions of *S. coccinea* and *S. purpureocaerulea*, mainly based on material from Vietnam, and color photos of the two species are provided.

SYSTEMATICS

Family RUBIACEAE Juss.
Genus *Spiradiclis* Blume

*Spiradiclis purpureocaerulea* H. S. Lo
(Figs 1A-C; 2)


**TYPE SPECIMEN.** — China. Guangxi: Longzhou County, Shangjing Town, roadside, on lime stone, 15.VIII.1935, S. P. Ko 55307 (holo-, IBSC [IBSC 0510671]!; iso-, IBK [IBK 00191520]!)

**SPECIMEN DATA.** — Vietnam. Thanh Hoa: Phu Luong Nature Reserve, Thanh Cong District, on limestone hills, 20°29′29″N, 105°58′26″E, alt. 576 m, 23.X.2017, N. H. Xia et al. TYH-1281 (IBSC).

**DESCRIPTION**

Perennial herbs, 15-30 cm tall; stems ascending, densely pubescent, hairs brown. Leaves subsessile; blade ovate to ovate-elliptic, 3-9 × 1-4 cm, drying papery, adaxially dark green and densely strigose-hispidulous, abaxially pale green and densely pubescent; apex acute to obtuse; base rounded or obtuse, usually decurrent; secondary veins 7-13 on each side of the midrib; stipules subulate-triangular, 1-3 mm long, pubescent on both surfaces, apex caudate-acuminate, 0.5-1.5 mm long. Inflorescence congested-cymose, terminal, 5-13-flowered; peduncle up to 6 mm, densely pubescent; bracts subulate-triangular, 1.5-3.5 mm long, pubescent on both surfaces. Flowers distyloous. Calyx with unicellular and white pubescence outside; hypanthium obconico-globose, c. 2 mm long; calyx lobes narrowly triangular, 3.5-4.5 mm long. Corolla purple red, slenderly salverform, puberulent outside; tube 1.9-2.4 cm long; lobes broadly ovate, c. 6 mm long, obtuse; stamens 5; stigma bilobed; ovary 2-celled, ovules numerous in each cell on peltate axile placentas attached to middle of septum. Long-styled flowers: corolla tube inside with pilose ring above staminodes; filaments c. 2.6 mm long, adnate to the base of the corolla tube; anthers linear, c. 3 mm long; style 11-14 mm long, glabrous; stigmas positioned at ⅔ of the corolla tube, lobes linear-oblong, c. 2.8 mm long. Short-styled flowers: corolla tube inside with pubescence near the base; filaments 11-14 mm long, adnate to the corolla tube; anthers linear, c. 3.5 mm long, positioned somewhat above the middle of corolla tube to the level of the throat; style 2-3 mm long, glabrous; stigmas included near the base of the corolla tube, lobes lanceolate, c. 2 mm long. Capsules subglobose, 4-4.5 mm in diam., densely pubescent, opening into 4 valves. Seeds many, angular. Flowering August-October, fruiting October-November.

*Spiradiclis coccinea* H. S. Lo
(Figs 1D-F; 3)


*S. purpureocaerulea* auct. non H. S. Lo, Lee et al., Korean Journal of Agricultural Science 46 (3): 647, fig. 3 (2019).

**TYPE SPECIMEN.** — China. Guangxi: Longzhou County, Wulan Town, Banbi Village, dense forest, on rocks, 4.VIII.1957, S. H. Chou 13475 (holo-, IBSC [IBSC 0510628]!; iso-, IBK [IBK 00191517]!)

**SPECIMEN DATA.** — Vietnam. Ninh Binh: Nho Quan District, Forest Control Point, 20°16′28″N, 105°40′57″E, alt. 400 m, 17.VI.2014, N. S. Khang 708 (HN). — Ha Nam: Kien Khe District, 20°29′12″N, 105°52′9″E, alt. 198 m, on limestone hills, 3.VI.2019, N. H. Xia et al. TYH-2163 (IBSC).

**DESCRIPTION**

Perennial herbs, to 20 cm tall; stems erect, glabrous or subglabrous. Leaves shortly petiolate; petioles 1-2 mm long; blade narrowly elliptic-oblong or elliptic-oblong, 4-8 × 1.3-3 cm, drying papery, glabrous on both surfaces, adaxially dark green, abaxially pale green, apex obtuse to acute, base cuneate, secondary veins 5-9 on each side of the midrib; stipules triangular, 3-5 mm long, 2-3 mm wide at base, apex acute to long acuminate, 0.5-1.5 mm long. Inflorescence congested-cymose, terminal,
8-12-flowered or more, glabrous; peduncle usually 0.5-5 mm long, glabrous; bracts subulate-triangular, 0.5-1.5 mm long, glabrous on both surfaces. Flowers distylos. Calyx glabrescent; hypanthium portion obconic, 1.2-2 mm long; lobes narrowly lanceolate, 1.7-3 mm long. Corolla dark red or purple red, slenderly salverform, glabrous or puberulent outside; tube 1.5-2.4 cm; lobes broadly ovate to suborbicular, 4.5-6 mm long, apex acute; stamens 5; stigma bilobed; ovary 2-celled, ovules numerous in each cell on peltate axile placentas attached to middle of septum. Long-styled flowers: corolla tube inside with...
Fig. 2. — Holotype of *Spiradiclis purpureocaerulea* H. S. Lo, S. P. Ko 55507 (IBSC 0510671).
Critical notes on *Spiradiclis purpureocaerulea* H. S. Lo (Rubiaceae) from Vietnam

Fig. 3. — Holotype of *Spiradiclis coccinea* H. S. Lo, S. H. Chun 13475 (IBSC 0510628).
pilose ring above stamens; filaments 1.5-2.5 mm long, adnate to the base of the corolla tube; anthers linear, c. 3 mm long, positioned near the base of the corolla tube; style 1.2-1.5 mm long, glabrous; stigmas positioned a little below the throat of the corolla tube, lobes linear-oblong, c. 2.4 mm long. Short-styled flowers: corolla tube inside with dense pubescence near the base; filaments 9-13 mm long, adnate to the corolla tube; anthers linear, c. 3 mm long, positioned at ⅔ of the corolla tube; style c. 2 mm long, glabrous; stigmas included near the base of the corolla tube; lobes lanceolate, c. 1.8 mm long. Capsules subglobose, 4-4.5 mm in diam., glabrous, opening into 4 valves. Flowering June-August, fruiting August.

REMARKS

*Spiradiclis coccinea* is morphologically similar to *S. purpureocaerulea* by the congested-cymose inflorescences, short peduncles, slenderly salverform corollas and subglobose capsules, but differs from the latter mainly by having erect stems (vs ascending), most plant parts glabrous or subglabrous (vs densely pubescent), leaf blades narrowly elliptic-oblong or elliptic-oblong (vs ovate to ovate-elliptic) and calyx lobes 1.7-3 mm long (vs 3.5-4.5 mm long) (Lo 1986).

Currently, there are five species of *Spiradiclis* distributed in northern Vietnam (Lo 1999; H6 2000; Lee et al. 2019). Among them, *Spiradiclis coccinea*, *S. leptobotrya* and *S. purpureocaerulea* are restricted to limestone karst areas and usually occur at elevations of 300-600 m, while *S. caepitosa* and *S. hainanensis* grow on slightly acidic soil at elevations of 2500-2900 m and 0-1200 m, respectively. Additionally, the flowering time of the genus in Vietnam is concentrated in May (*S. hainanensis*), July (*S. coccinea*), September (*S. caepitosa* and *S. purpureocaerulea*) and December (*S. leptobotrya*). A key to the five species of *Spiradiclis* in Vietnam is provided below.

### KEY TO THE SPECIES OF *SPIRADICLIS* BLUME IN VIETNAM

1. Leaf blades cordate; plant creeping ................................................................. *S. hainanensis* H. S. Lo  
   — Leaf blades not cordate; plant ascending or erect ................................. 2

2. Peduncles longer than 2 cm; corolla tube shorter than 1 cm .......................... 3  
   — Peduncles shorter than 1 cm; corolla tube longer than 1.6 cm .................. 4

3. Leaf blades 1-6.5 cm long; secondary veins 3-7 on each side of the midrib; capsules narrowly oblong or linear-oblong .................................................. *S. caepitosa* Blume  
   — Leaf blades 5-10 cm long; secondary veins 8-15 on each side of the midrib; capsules subglobose .......................................................... *S. leptobotrya* Pit.

4. Plants usually erect, glabrous or subglabrous; leaf blades narrowly elliptic-oblong or elliptic-oblong; calyx lobes 1.7-3 mm long ........................................... *S. coccinea* H. S. Lo

4. Plants usually ascending, densely pubescent; leaf blades ovate to ovate-elliptic; calyx lobes 3.5-4.5 mm long .......................................................... *S. purpureocaerulea* H. S. Lo

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### REFERENCES


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