

NOTES ON THE FLORA OF TAIWAN (16)--THE *PHYTOLACCA* L. (*PHYTOLACCACEAE*)

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Abstract: Two species of *Phytolacca*, *P. americana* and *P. japonica*, were recognized in Taiwan. *Phytolacca americana* is a recently naturalized species and the previously accepted species, *P. acinosa* (= *P. esculenta*) is turned out to be *P. japonica*.

INTRODUCTION

Phytolacca, mainly distributed in tropical area, contains 35 species (Melchior, 1954), though Nowicke (1968) thought it much less. In Nowicke's treatment, by following Walter (1909), three subgenera were recognized by the fused condition of carpels.

For the *Phytolacca* species of Taiwan, *P. acinosa* was first recorded by Forbes and Hemsley (1889), which was adopted by Henry (1896) and Matsumura and Hayata (1906). Kawakami (1910) and Hayata (1917) also followed that treatment, but Sasaki (1928, 1930) took it as a variety *P. acinosa* var. *esculenta*. Later, Yamamoto (1932) claimed that Taiwan's specimens bearing smaller and elliptic to lanceolate-elliptic leaves and shortly scabrous peduncles should be referred to *P. acinosa* instead of *P. esculenta*. One year before Yamamoto's claimation, Masamune (1931) added *P. japonica*, a species proposed by Makino (1892), to the flora of Taiwan. Since then, two species was adopted in Taiwan (Kudo & Masamune, 1932; Masamune 1936; Liu, 1976) till Yang (1982) listed the third species, *P. americana*.

Phytolacca japonica, not treated by Walter (1909) and Nowicke (1968), is very similar to *P. acinosa* (= *P. esculenta*) in the outer appearance but differs from it by fused carpels and concentrically striate seeds (Makino, 1901). After carefully examined Taiwan's specimens, those determined as *P. acinosa* or *P. esculenta* by the earlier botanists, such as Kawakami, Sasaki, Yamamoto and Masamune, should be referred to *P. japonica*, and most of the specimens determined as *P. japonica* by more recent collectors should be referred to *P. americana*. Thus only two species of *Phytolacca* occur in Taiwan.

KEY TO THE SPECIES IN TAIWAN

1. Peduncles short, 0.3-2 cm long, erect in fruiting stage; seeds with concentric striations
----- 2. *P. japonica*
1. Peduncles long, (2.5-) 4.5-10 cm long, pendent in fruiting stage; seeds smooth
----- 1. *P. americana*

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TAXONOMIC TREATMENT

1. *Phytolacca americana* L., Sp. Pl. 441. 1753; Nowicke in Ann. Missouri Bot. Gard. 55: 318. 1968; Yang, List Pl. Taiwan 578. 1982.

Erect herbs; stem angular. Leaves elliptic, blade 15-18 cm long, 5.2-7 cm wide, apex acute to acuminate, petiole 3-4 cm long; raceme long pedunculate, opposite a leaf; peduncles (2.5-) 4.5-10 cm long in fruiting stage, glabrous; rachis glabrous; pedicels 9-10 mm long in fruiting stage, scabrous; bracteoles 2, lanceolate, alternate in the middle part of pedicel; tepals 5, orbicular, rounded at apex, 1.5 mm long; filaments flat, ribbon-like but gradually narrowed at apex; ovaries fused; style free but stick together; stigma terminal. Fruitlets fused. Seeds black, shining and smooth.

Distribution: Native to eastern North America; introduced into Europe, Africa and Asia; Taiwan naturalized in the northern part.

Habitat: Open roadside.

Altitude: 0-700m.

Flowering: April to October.

SPECIMENS EXAMINED:

TAIPEI: Chinshan, C. C. Wang 1044 (TAI), C. S. Kuoh 1426 (TAI), W. S. Tang 920 (TAI); Huangtien, J. C. Wang 3398 (TAI); Juifang, Tsaoshan, C. C. Liao et al. 500 (HAST); Leikungpo, Hsiaoketou, C. I. Peng 11958 (HAST), C. T. Moo et al. 1052 (TAIF). Mientien-shan, C. M. Kuo 5464 (TAI); Nankang, C. C. Chuang s. n. Aug. 16, 1962 (TAI); Neihu, C. M. Kuo 4903 (TAI); Suting, T. C. Huang 10464 (TAI), C. C. Hsu 3232 (TAI), C. I. Peng 8569 (HAST); Wanli, T. C. Huang 13139 (TAI), 13140 (TAI); KELLUNG: Hsinshan Dam, S. F. Huang & K. C. Yang 38779 (TAI); Hopingtao, A. M. Liao 1 (TAI). TAOYUAN: Hsiahu to Kueishan, W. P. Leu 1061 (HAST).

2. *Phytolacca japonica* Makino in Bot. Mag. Tokyo 6: 49. 1892; l. c. 15: 142. 1901; Masamune in Journ. Soc. Trop. Agr. 3: 392. 1931; Liu in Fl. Taiwan 2: 295. 1976, p. p., excl. specimens Kuoh 1426, Chuang s. n. in 1962.

P. acinosa auct. non Roxb.: Forbes & Hemsley in Journ. Linn. Soc. Bot. 26: 331. 1889; Henry, list Pl. Form. 76. 1896; Matsumura & Hayata in Journ. Coll. Sci. Univ. Tokyo 22: 333. 1906; Yamamoto in Journ. Soc. Trop. Agr. 4: 51. 1932; Liu in Fl. Taiwan 2: 293. pl. 300. 1976.

P. acinosa Roxb. var. *esculenta* (van Houtte) auct. non Maxim.: Sasaki List Pl. Form. 176. 1928; Sasaki, Cat. Gov. Herbarium. 200. 1930.

Erect herbs, about 1.5 m high; stem angular, glabrous. Leaves oblong, rarely obovate, acuminate at apex, attenuate to cuneate at base, blade 12-30 cm long, 4-11 cm wide, petiole 0.2-3 cm long. Raceme opposite a leaf, 2.5-15 cm long; peduncles 0.3-2 cm long, scabrous; pedicels scabrous; bracteoles 2, alternate in the middle part of pedicel, setaceous; tepals 5, pink or white, imbricate in bud; stamens 9, filaments dilated at base, anthers dorsifixed; theca 2, connate at the attached point of filament; ovaries 6-9, fused; style separate; stigma terminal. Fruit depressed-globose, 6-9 fruitlets, fused. Seeds black, reniform-orbicular, about 3 mm long, with concentric striations.

Distribution: Japan, Taiwan; Taiwan mainly in the northern and central part.

Habitat: Open roadside, sunny slope, or in forest along a trail.

Altitude: 300-3000m.

Flowering: March to October.

SPECIMENS EXAMINED:

TAIEPI: Chihsinshan, *S. S. Ying* 1904 (NTUF); Kuanyingshan, *T. Y. Yang* 351 (TAI); Urai, *E. Matuda s. n.* July 25, 1918 (TAI), *S. Sasaki s. n.* July 22, 1918 (TAI), *Kanehira & Sasaki s. n.* May 9, 1920 (TAIF); Tonroku to Kabonsan, *Fukuyama s. n.* May 11, 1935 (TAI). ILAN: Buta to Ryohen, *T. Suzuki* 7570 (TAI); Chiliting Ridge, *T. C. Huang* 7855 (TAI); Muruloahu, *Hibino et al. s. n.* June 30, 1938 (TAI); Nanhutashan, *C. M. Kuo* 5070 (TAI); Nanshan to Chiliting, *C. C. Hsu* 5834 (TAI); Taipingshan, *S. Suzuki s. n.* Aug. 12, 1928 (TAI), *S. Sasaki s. n.* March 22, 1918 (TAIF); Toba to Rumoan, *S. Suzuki* 4889 (TAI). TAOYUAN: Shulin to Palin, *C. S. Kuoh* 2549 (TAI). HSINCHU: Kuanwu, *T. C. Huang* 4123 (TAI); Kuanwu, Kuaishan, *T. C. Huang* 6640 (TAI), 6646 (TAI), *J. C. Wang & K. C. Yang* 4802 (TAI); Taaran, *S. Sasaki s. n.* May 4, 1909 (TAI); Tapachienshan, *C. S. Kuoh* 3252 (TAI). MIAOLI: Compartment 133, Tashueshan Logging Station, *T. I. Chuang* 486 (TAI), *Kuo & Tao* 486 (HAST, NTUF); Shihlihsing, *Kawakami & Sasaki* 1405 (TAIF); Shihshuikeng, *Kawakami & Sasaki s. n.* May 4, 1909 (TAIF); Taian Hot Spring, *Y. W. Sang* 7668 (HAST). TAICHUNG: Chiapaotai, *S. F. Huang* 557 (TAI); Chika to 369 Shanchuang, *T. C. Huang* 7273 (TAI); Kukuan to Chiapaotai, *W. S. Tang* 316 (TAI), *W. P. Leu* 478 (HAST); Lishan, *C. M. Kuo* 7590 (TAI), 7592 (TAI); Pahsienshan, *S. Suzuki s. n.* Oct. 22, 1929 (TAI); Wuling, *S. S. Ying* 3661 (NTUF); Zueiyen, *Ou & Kao* 9416 (TAI). NANTOU: Chingjing Farm, *C. I. Peng* 6313 (HAST); Jenai Hsiang, Huishun Forest Area, *C. I. Peng et al.* 14054 (HAST); Hohuanshan, *Mori s. n.* Feb. 1910 (TAIF); Mareppa, *S. Sasaki s. n.* July 27, 1992 (TAIF). Meiyen, *M. T. Kao* 6677 (TAI), *G. Masamune* 4586 (TAI); Musya Santinozyo, *G. Masamune et al.* 2208 (TAI); Musya to Horisya, *S. Sasaki s. n.* March 8, 1918 (TAI); Shenmu forest trail, *C. I. Peng & Y. K. Chen* 10964 (HAST), 11489 (HAST). CHIAYI: Alishan, *S. Sasaki s. n.* May 2, 1913 (TAIF); jujiro, *S. Sasaki s. n.* May 1913 (TAIF); Lair-Jir, *J. C. Wang et al.* 6527 (HAST). TAINAN: Tatungshan, *T. C. Huang & S. F. Huang* 16010 (TAI). KAOHSINUNG: Magatun, *Kawakami & Mori* 6025 (TAIF); Taoyuan, Chuyunshan forest road at mileage sign 26 km, *T. Y. Liu* 61 (HAST). PINGTUNG: Kosyun, *Inamura* 9333 (TAIF). HUALIEN: Tosato to Sanpu, *Masamune & Mori s. n.* July 3, 1938 (TAI); Taito, *Kawakami & Mori* 5755 (TAIF).

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台灣植物誌之觀察（16）—— 商陸屬（商陸科）

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摘要

根據文獻記載，台灣有三種商陸屬（*Phytolacca*）植物：台灣商陸（*P. acinosa*），美國商陸（*P. americana*）及日本商陸（*P. japonica*）。本文經檢視台灣主要標本館之標本後，確認僅美國商陸及日本商陸二種生長於台灣。美國商陸是馴化野生的種類。日本商陸雖近似台灣商陸，但果實緊密結合在一起及種子表皮具有同心圓刻痕可與台灣商陸區別。