



Ornamental Pothos – A Taxonomic Dilemma

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Abstract: As an indoor plant and air purifier, ornamental Pothos are becoming increasingly popular. This group of evergreen plants is usually grown as a hanging houseplant and has thick, heart-shaped, green, waxy leaves with traces of yellow. There is disagreement on the taxonomic identity of ornamental Pothos varieties. Thus, a study was carried out using 21 ornamental Pothos gathered from various nurseries. One species of the genus *Pothos*, *P. scandens*, is used as a check. The ornamental Pothos varieties are classified into 11 species across 5 genera, which include 3 species of *Monstera*, 3 species of *Philodendron*, 2 species of *Raphidophora*, 2 species of *Scindapsus*, and 1 species of *Epipremnum*. None of them are members of the genus *Pothos*, a group of flowering plants in the monocotyledonous family Araceae, despite sharing the common name Pothos. Both true and ornamental Pothos have therapeutic benefits as well, including anti-oxidant, anti-bacterial, anti-fungal, and anti-carcinogenic properties. A brief, in-depth description and colour images are included for simple identification of the species.

Keywords: Epipremnum; Monstera; Philodendron; Raphidophora; Scindapsus; Pothos.

INTRODUCTION

The genus *Pothos* L. comprises about 70 species of climbers found in tropical and subtropical forests, spread from Madagascar to Western Oceania (east to Vanuatu) and China (north to Hubei) to Australia (south to Queensland, New South Wales), belonging to *Araceae* subfamily *Pothoideae* (*sensu* Bogner & Nicolson 1991). Plants are commonly hemi-epiphytes with bisexual flowers. There is still disagreement over the monophyly of *Pothos*, as it is currently recognized (Boyce 2000). Plants are mostly used as indoor ornamentals, some are used to treat insect and animal bites, tumours, coughs, blood coagulants, and wounds. Numerous biological activities were demonstrated by *Pothos* species, such as antimicrobial, antioxidant, antipyretic, anti-diabetic, bronchodilator, burn wound healing, anti-cariogenic, thrombolytic, anticancer, stabilisation of peritoneal mast cells, hyaluronidase inhibitory, and histamine release inhibiting properties (Dutta *et al.* 2021).

As an indoor plant, ornamental Pothos are becoming more and more popular. This group of evergreen plants is usually grown as a hanging houseplant and has thick, heart-shaped, green, waxy leaves with traces of yellow. Maybe its elegance and beautiful traits, which distinguish its leaves, are the main reasons for its popularity, rather than only its purifying properties. This group of plants is easily multiplied by vegetative propagation. However, there is

disagreement on the taxonomic classification/identification of ornamental Pothos varieties and accessions. For example, *Epipremnum aureum* is usually known as Pothos (https://en.wikipedia.org/wiki/Epipremnum_aureum).

Therefore, a study was conducted with 21 ornamental Pothos varieties to identify these plants properly.

MATERIALS AND METHODS

A total of 21 ornamental Pothos varieties were collected from different nurseries in Bangladesh. And one species of *Pothos*, *P. scandens*, conserved at the Botanical Garden of Bangladesh Agricultural University (BAUBG), is also described for comparison purposes. The herbarium specimens, relevant published literature (Ahmad *et al.* 2007), internet resources, and applications (such as PlantNet, PlantSnap, etc.) were consulted to identify the gathered varieties, deposited in the net house of BAUBG. A comprehensive description and colour photos are included to identify the species easily. The Plants of the World Online (<https://powo.science.kew.org/>) and WFO–The World Flora Online (<http://www.worldfloraonline.org>) were consulted to update the botanical nomenclature.

RESULTS AND DISCUSSION

The ornamental Pothos varieties belong to 11 species under 5 genera *viz.* *Monstera* (3 spp.), *Philodendron* (3 spp.), *Raphidophora* (2 spp.), *Scindapsus* (2 spp.), and only

one species of *Epipremnum* (Fig. 1). Interestingly most of the collected and available varieties belonged to the only species of *Epipremnum*, *E. aureum*. Although they bear the common name Pothos, none belong to the genus *Pothos*, a genus of flowering plants in the monocotyledonous family Araceae. Both true and ornamental Pothos possess medicinal value for example anti-oxidant, anti-bacterial, anti-fungal, anti-carcinogenic, etc., and they also act as air purifiers. A detailed study with a large number of varieties is, therefore, suggested for proper (taxonomic) identification and to enrich our knowledge of the ornamental Pothos plants.

A comparative description of leaf descriptors was presented and discussed below –

1. *Epipremnum aureum* (Linden & André) G.S. Bunting, Ann. Missouri Bot. Gard. 50: 28. 1964. **Fig. 1A–G**

Common name: Money plant, Golden Pothos, Ceylon creeper, Hunter's robe, Silver vine, Taro vine

An evergreen vine, up to 2–3 m as a horizontal groundcover, but the trailing and climbing vines grow up to 15 m, with stems up to 4 cm in diameter, climbing using aerial roots that adhere to surfaces; Pseudostems 10–17 × 1 cm, green, carmine or purple; Cataphylls 2–10 cm long, pale carmine; Petioles slender, shorter than leaf blade, and grooved to clasp the stem, 15–35 × ca 1 cm; stipule fused to petiole, free edges whitish, turning brownish, drying & dropping; Leaves solitary, heart-shaped to elliptic-ovate, glossy, medium green variegated with paler green underside, veins may be reddish, alternate, simple, sheathing, acuminate, cordate base, entire, coriaceous, glossy, green or green variegated yellow, cream to white, 20–30 × 10–14 cm. Seldom blossoms in a spadix surrounded by a spathe. Fruit-type berry, red-orange when ripe, houseplants rarely if ever produce fruits.

Origin and distribution: Native to Society Is (Moorea); Introduced to Assam, Bangladesh, Bermuda, Brazil, Cameroon, Caroline Is., Chagos Archipelago, China, Comoros, Cook Is., Costa Rica, Cuba, Dominican Republic, Ecuador, Fiji, Florida, Guinea, Haiti, Hawaii, India, Ivory Coast, Kenya, Leeward Is., Lesser Sunda Is., Line Is., Malaya, Nansei-shoto, Ogasawara-shoto, Puerto Rico, Queensland, Seychelles, Solomon Is., Sri Lanka, Suriname, Thailand, Trinidad-Tobago, Tuamotu, Venezuelan Antilles.

Uses: Ornamental, treat traumatic injuries, abscesses, and rheumatic arthralgia, eliminating indoor contaminants including benzene, xylene, and formaldehyde <<https://hort.extension.wisc.edu/articles/pothos-epipremnum-aureum/>>.

Varieties studied: Money plant, Snow Queen, N'Joy, Global Green, Monjula, Sleeping Pothos, Jade

2. *Monstera acuminata* K.Koch, index Seminum (B, Berolinensis) 1855(App.): 4. 1855. **Fig. 1H**

Common name: Monstera

An evergreen vine, up to 60 m, with stems up to 3.5 cm in diameter, climbing using aerial roots that adhere to surfaces, internodes 3–10 cm long, bearing cataphylls but not foliage leaves. Juvenile: a shingle plant, stem elliptic in cross-section, internodes 1–5 cm long; Petiole 25–45 cm long, vaginate to the base of the blade, the sheath wings persistent, the geniculum 3.5–5.0 cm long. Leaves ovate, glossy, alternate, simple, sheathing, acute apex, unequal base, entire, sub-coriaceous, waxy, green in color, 35–65 cm x 15–35 cm. Rarely flowers in a spadix surrounded by a spathe greenish-white in colour. Fruit-type berry, houseplants rarely if ever produce fruits.

Origin and distribution: Native to Belize, Guatemala, Honduras, Mexico, Nicaragua.

Uses: Ornamental, air purifier, maintain healthy humidity, remedy/treatment for snake bite, arthritis.

3. *Monstera adansonii* Schott, Wiener Z. Kunst 4: 1028. 1830. **Fig. 1I**

Common name: Adanson's Monstera, Cheese Plant, Five Hole Plant, Swiss Cheese Plant, Swiss Cheese Vine.

An evergreen vine, up to 2–4(-6) m, with stems up to 3 cm in diameter, climbing using aerial roots that adhere to surfaces, internodes 3–10 cm long; Petiole smooth, 20–60 cm long, Leaves heart-shaped, glossy, waxy, alternate, simple, sheathing, cuneate to broadly truncate, sometimes oblique and unequal, being cuneate on one side and truncate to subcordate on the other side, the tip acute or shortly mucronate, coriaceous, green in color, contain large oval-shaped perforations, 25–70 cm x 15–45 cm. Occasionally produces cream to light yellow flowers in a spadix surrounded by spathe. Fruit-type berry, houseplants rarely if ever produce fruits.

Origin and distribution: Native to Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Honduras, Leeward Is., Mexico, Netherlands Antilles, Nicaragua, Panamá, Peru, Suriname, Trinidad-Tobago, Venezuela, Windward Is.; Introduced to Puerto Rico.

Uses: Ornamental, air purifier, maintain healthy humidity, remedy/treatment for snake bite, arthritis.

4. *Monstera deliciosa* Liebm, Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn 1: 19. 1849. **Fig. 1J**

Common name: Ceriman, Cut leaf Philodendron, Hurricane Plant, Mexican Breadfruit, Split-leaf Philodendron, Swiss Cheese Plant.

An evergreen vine, up to 20 m (wild), 2-3 m (indoor), up to 4 cm in diameter, climbing using aerial roots that adhere to surfaces; Leaves heart-shaped, leathery, glossy, large, alternate, simple, sheathing, rounded apex, cordate base, pinnated, green, lobed and fenestrate, 25–90 cm x 25–75 cm. Rarely flowers in a spadix surrounded by a spathe

cream-white in colour. Fruit-type berry, houseplants rarely if ever produce fruits.

Origin and distribution: Native to Guatemala, Mexico; Introduced to Ascension, Azores, Bangladesh, Comoros, Cook Is., Costa Rica, Honduras, Korea, Nicaragua, Seychelles, Society Is., Trinidad-Tobago.

Uses: Ornamental, air purifier, maintain healthy humidity, remedy/treatment for snake bite, arthritis.

5. *Philodendron brandtianum* K. Krause, H.G.A.Engler (ed.), Pflanzenr., IV, 23Db: 46. 1913. **Fig. 1K**

Common name: Brandi, silver leaf philodendron.

An evergreen vine, up to 5 m, climbing using aerial roots that adhere to surfaces; Petiole slightly slender, semiterete on the upper side, 50 cm long, almost 1 cm thick in the lower part, Leaves heart-shaped, glossy, medium green variegated, alternate, simple, sheathing, cordate, acuminate, entire, coriaceous, olive green with silver or grayish-white patches, ca. 30 cm long and almost equally as wide, posterior lobes subovate, rounded, 10 cm x 12–15 cm wide. Rarely flowers in a spadix surrounded by a spathe, green externally, internally white or pale purplish towards the base, oblong-lanceolate, Peduncle short, terete, thick, 2.5 cm long, 8 mm thick. Fruit-type berry.

Origin and distribution: Native to Bolivia, Brazil, Colombia.

Uses: Ornamental, air purifier, treatment of serpent bite and pain killer, toxic symptom severe discomfort including burning and swelling of the lips, vomiting.

6. *Philodendron cordatum* Kunth ex Schott, Syn. Aroid.: 95. 1856. **Fig. 1L**

Common name: Neon Pothos

An evergreen vine, up to 17 m, climbing using aerial roots that adhere to surfaces; Prophyll 29–40 cm x 6–11 cm, narrowly triangular, green to yellowish-green becoming rusty red, covered with vinaceous extra-floral nectaries. Petiole 55–61 cm long, Leaves heart-shaped to ovate, alternate, simple, sheathing, acute, cordate base, entire, chartaceous to subcoriaceous, glossy, deep green color with white speckles on the more mature leaf, 40–65 x 23–41 cm. seldom blossoms in a spadix surrounded by a spathe; Fruit-type berry, houseplants rarely if ever produce fruits.

Origin and distribution: Native to Brazil.

Uses: Ornamental, air purifier, treatment of serpent bite and pain killer, toxic symptom severe discomfort including burning and swelling of the lips, vomiting.

7. *Philodendron hederaceum* (Jacq.) Schott, Wiener Z. Kunst 3: 780. 1829. **Fig. 1M–O**

Common name: Velvet philodendron, Heart leaf Philodendron, Parlor Ivy, Philodendron Sweetheart Plant

An evergreen vine, up to 7 m, climbing using aerial roots that adhere to surfaces; cataphylls 6–10 cm long, unribbed, weakly 1-ribbed, or bluntly to sharply 2-ribbed, pale green, deciduous; Petioles (6)9.7–27(33) cm long, 6–10 mm diam, terete to subterete, pale green, Leaves heart-shaped, glossy, medium green variegated with paler green, alternate, simple, sheathing, acuminate, cordate base, entire, coriaceous, 11–40(50) cm x 8–24(34) cm wide. Rarely flowers in a spadix surrounded by a spathe of white flowers, peduncle (2-3)4–15.7 cm long, 8–12 mm diam., pale green, sometimes tinged purple, matte; spathe subcoriaceous to coriaceous, 9–16.6(24) cm long, (0.9–2.6(3.3)). Rarely produce fruits.

Origin and distribution: The native Belize, Bolivia, Brazil, Cayman Is., Central American Pacific Is., Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Leeward Is., Mexico Central, Mexico Gulf, Mexico Northeast, Mexico Southeast, Mexico Southwest, Nicaragua, Panamá, Peru, Puerto Rico, Suriname, Trinidad-Tobago, Venezuela, Windward Is.; Introduced to Bangladesh, Seychelles.

Uses: Ornamental, air purifier, treatment of serpent bite and pain killer, toxic symptom severe discomfort including burning and swelling of the lips, vomiting.

Varieties studied: Micans, Heart Leaf, Brasil

8. *Pothos scandens* L., Sp. Pl.: 968. 1753. **Fig. 1P**

Common name: Batilota, Climbing aroid

An evergreen vine, up to 15 m, with stems up to 10 mm in diameter, climbing using aerial roots that adhere to surfaces, Pseudostem to 20 cm long; cataphylls green, chequered dark pink; Leaves obovate-oblong to linear-oblong, petiole broadly winged, petiole to 25 cm x 1–1.5 cm, base decurrent, apex truncate, rounded or auriculate, glossy, opposite, simple, sheathing, entire, green, to 35 cm x 18 cm. Inflorescence solitary in the axils of middle and distal leaves, spadix surrounded by a spathe greenish to maroon, 5–6 cm long x 4–6 mm across at base. Fruit-type berry, mid-green, ripening to deep scarlet.

Origin and distribution: Native to Andaman Is., Assam, Bangladesh, Borneo, Cambodia, China South-Central, Comoros, East Himalaya, India, Jawa, Laos, Lesser Sunda Is., Madagascar, Malaya, Maluku, Myanmar, New Guinea, Nicobar Is., Philippines, Seychelles, Sri Lanka, Sulawesi, Sumatera, Thailand, Tibet, Vietnam.

Uses: Ornamental, an edible plant, to treat traumatic injuries and rheumatic arthralgia; reducing swelling and treating wounds, muscle catches, sprains, bone fractures,

blisters, and diarrhea. The leaves are used as tea by the Dai ethnic minority.

9. *Rhaphidophora pertusa* (Roxb.) Schott, Bonplandia (Hannover) 5: 45. 1857. **Fig. 1Q**

Common name: Pertusa

An evergreen vine, up to 0.5 m, with stems up to 3.5 cm in diameter, climbing using aerial roots that adhere to surfaces; Pseudostem 10–17 cm × 1 cm, green, carmine or purple. cataphylls 2–10 cm long, pale carmine; petiole 15–35 cm × ca 1 cm, dark pink, sometimes with darker stripes; Leaves oval to heart-shaped, oblong with a tendency to be a bit round, glossy, pinnately cut or rarely entire, sometimes perforated with large holes, random fenestration patterns and splits are bigger, alternate, simple, sheathing, acute, green or green variegated, 20–30 cm × 10–14 cm, margins undulate, apex acuminate ending in a short arista; central leaflet base convex, with a petiolule to 3.5 cm long; lateral leaflets slightly asymmetrical, base cuneate with a petiolule to 1.5 cm long, glossy medium green, with impressed veins above, paler underside with raised reddish veins. Rarely flowers in a spadix surrounded by a spathe; peduncle 15–25 cm long × ca 1 cm wide at the base, same colour as the petiole, or pale white-green; spathe tube cylindrical, to 5.5 cm × ca 2 cm, pale yellow-green to white with faint darker veins. Fruit-type berry, houseplants rarely if ever produce fruits.

Origin and distribution: Andaman -Nicobar Island and the Maldives as well as Bangladesh, India, Myanmar, Thailand, Sri Lanka.

Uses: Ornamental, air purifier.

10. *Rhaphidophora tetrasperma* Hook.f., Fl. Brit. India 6: 548. 1893. **Fig. 1R**

Common name: Mini Monstera, Monstera Ginny

An evergreen vine, up to 5 m, climbing using aerial roots that adhere to surfaces; Pseudostem up to 20 cm long; cataphylls green, chequered dark pink; petiole to 25 cm × 1–1.5 cm, white-green or carmine; Leaves strictly narrow oval, glossy, and deeply lobed or pinnately compound, often have prominent veins and a lush appearance, leaves trifoliate, the splits on the leaves are more organized and almost similar on all the leaves, alternate, simple, acute, entire, green, to 35 cm × 18 cm, central leaflet with a petiolule to 4 cm long; lateral leaflets with a petiolule to 1.5 cm long, plain green, with impressed veins above Rarely

flowers in a spadix surrounded by a spathe, 2.5–6 cm × 1–2 cm, white-green with faint darker veins near the base, white at the base. Fruit-type berry, houseplants rarely if ever produce fruits.

Origin and distribution: Native to Thailand, Malaya.

Uses: Ornamental, air purifier.

11. *Scindapsus pictus* Hassk, Tijdschr. Natuurl. Gesch. Physiol. 9: 164. 1842. **Fig. 1S–U**

Common name: Satin Pothos, Silk Pothos, Silver Pothos

An evergreen vine, up to 1.5 m as a horizontal groundcover, but the trailing and climbing vines can grow as long as 3 m, with stems up to cm in diameter, climbing using aerial roots that adhere to surfaces; Petioles slender, shorter than leaf blade, and grooved to clasp the stem; stipule fused to petiole, free edges whitish, turning brownish, drying & dropping. Leaves heart-shaped to ovate, alternate, simple, sheathing, cordate, acuminate, cordate base, entire, coriaceous, 7–10 cm long, and have a satin texture, matte green to dark green with blotches of silver gray, the underside of the leaf paler and without blotches. Rarely flowers bloom in a spike of tiny apetalous flowers surrounded by a spathe, green to white. Fruit-type berry, plants grown outdoors may produce flowers followed by small berries. Indoor plants typically do not produce flowers or fruit.

Origin and Distribution: Bangladesh, Borneo, Jawa, Malaya, Philippines, Sulawesi, Sumatera, Thailand.

Uses: Ornamental, air purifier, toxic to children and pets.

Varieties studied: Silver Satin, Argyaeus, Silver Lady

12. *Scindapsus treubii* Engl, Bot. Jahrb. Syst. 25: 13. 1898. **Fig. 1V**

Common name: Moonlight Pothos

An evergreen vine, up to 3 m, climbing using aerial roots that adhere to surfaces; Leaves heart-shaped, alternate, simple, sheathing, acuminate, cordate base, entire, coriaceous, glossy, thick, and dark green to silvery green or mottled depending on the cultivar, 10–13 cm long.

Origin and distribution: Native to Borneo, Jawa, Malaya.

Uses: Ornamental, air purifier, toxic to children and pets.

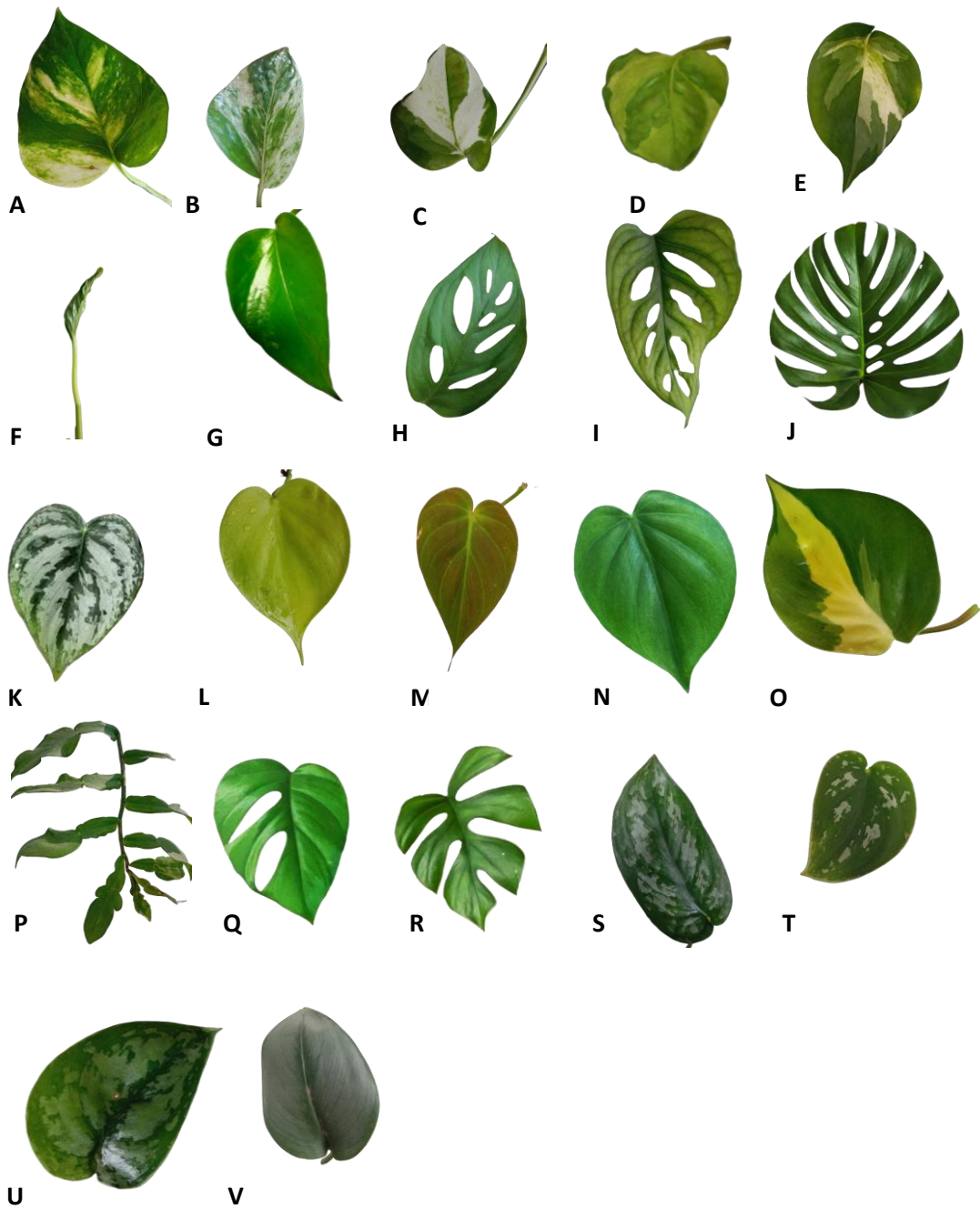


Figure 1. Photographs of ornamental Pothos leaf. A. *Epipremnum aureum* var. Money plant, B. *E. aureum* var. Snow Queen, C. *E. aureum* var. N'Joy, D. *E. aureum* var. Global Green, E. *E. aureum* var. Monjula, F. *E. aureum* var. Sleeping Pothos, G. *E. aureum* var. Jade, H. *Monstera acuminata* var. Acuminata, I. *M. adansonii* var. Adansoni, J. *M. deliciosa* var. Deliciosa, K. *Philodendron brandtianum* var. Silver Leaf, L. *P. cordatum* var. Neon, M. *P. hederaceum* var. Micans, N. *P. hederaceum* var. Heart Leaf, O. *P. hederaceum* var. Brasil, P. *Pothos scandens*, Q. *Rhapidophora pertusa* var. Pertusa, R. *R. tetrasperma* var. Tetrasperma, S. *Scindapsus pictus* var. Silver Satin, T. *S. pictus* var. Argyaeus, U. *S. pictus* var. Silver Lady, V. *S. treubii* var. Moonlight.

CONCLUSION

The common name Pothos is used for many varieties of Aroids which are not belong to the genus *Pothos*. A detailed investigation involving numerous varieties is, therefore, advised to accurately identify using taxonomic principles and enrich our knowledge of ornamental Pothos plants.

Conflict of Interest

The authors declare no conflicts of interest.

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