

A REVIEW ON SPATHIPHYLLUM: PHARMACOGNOSTIC AND PHARMACOLOGICAL APPROACH

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Article Received date: 23 April 2024

Article Revised date: 13 May 2024

Article Accepted date: 03 June 2024



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ABSTRACT

Spathiphyllum, also known as peace lily, is a popular ornamental plant with beautiful white spathe flowers. This plant is great for any room in your home as it can remove toxins from the indoor air as they can remove toxins such as formaldehyde, benzene, and trichloroethylene. Cleaner air can indirectly help your health by reducing your risk of respiratory diseases and improving your overall health. In some cultures, different parts of peace lily have been used in traditional medicine. For example, extracts of the leaves and roots are used topically to treat minor skin irritations and wounds. Peace lily contains various phytochemicals such as alkaloids, flavonoids, and phenolic compounds. Some of these compounds show medicinal activities such as antioxidant, anti-inflammatory, and antibacterial activities in other plant species. Although *spathiphyllum* contains toxic substances, it is generally safe to handle.

KEYWORDS: *Spathiphyllum*, Air purification, Antioxidant, Anti-inflammatory.

INTRODUCTION

Spathiphyllum is a genus of about 47 species of monocotyledonous flowering plants in the family Araceae, native to tropical regions of the Americas and southeastern Asia. Certain species of *Spathiphyllum* are commonly known as Spath or peace lilies. Headspace analysis and solvent extraction of the pollen-bearing flower spike of *Spathiphyllum cannaefolium* have been conducted by GC-MS, to determine the basis of the flower spike's attractancy to certain fruit-fly species.

Description

Peace Lily is botanically known as *Spathiphyllum macrophyllum* from the Araceae family. Common names include peace lily, spathiphyllum, and cobra plant. It is an evergreen herbaceous plant with large leaves 12 to 65 cm long and 3 to 25 cm wide. The flowers are in the form of a spadix and are surrounded by a white, yellow, or green spot 10 to 30 cm long. This easy-care plant has beautiful glossy green leaves and an unusual ability to bloom in moderate light.

Peace lilies have dark green leaves and white flowers in the warmer months. Not only are peace lilies hardy, they are also on the list of "Top 10 Air Purifying Plants for the Home," making them a great addition to any home or office. Peace lilies are often associated with peace,

purity, and innocence. This plant has received special attention in recent years through NASA's Clean Air Study. Placing plants in groups in places where many people gather, such as schools, offices, and canteens, gives you many possibilities.

Scientific Classification

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Monocots
Order	Alismatales
Family	Araceae
Subfamily	Monsteroideae
Tribe	Spathiphyllae
Genus	<i>Spathiphyllum</i>








These plants are evergreen herbaceous perennial plants with large leaves measuring 12–65 cm long and 3–25 cm broad. They produce flowers in a spadix, surrounded by a 10–30 cm long, white, yellowish, or greenish spathe. The plants do not require large amounts of light or water to survive. They are usually grown as houseplants, but they can also thrive outdoors in hot and humid conditions.






Sensational varieties of Spathiphyllum**Available species**

S. atrovirens, *S. bariense*, *S. Blandum*, *S. brevirostre*, *S. cannifolium*, *S. cochlearispathum*, *S. commutatum*, *S. cuspidatum*, *S. floribundum*, *S. friedrichsthalii*, *S. fulvovirens*, *S. gardneri*, *S. grandifolium*, *S. jejunum*, *S.*

juninense, *S. kalbreyeri*, *S. kochii*, *S. leave*, *S. lechlerianum*, *S. maguirei*, *S. mawarinumae*, *S. monachinoi*, *S. montanum*, *S. neblinae*, *S. ortgiesii*, *S. patina*, *S. perezii*, *S. phryniifolium*, *S. quindiuense*, *S. silvicola*, *S. solomonense*, *S. wallisii*, *S. wendlandii*.

Types of Peace Lilly

S.no	Name of Peace Lilly	Picture
1.	<i>Spathiphyllum</i> 'white stripe':	
	It is a beautiful, small plant native to Colombia and Venezuela. It has broad, rounded leaves and unique peace lily flowers that thrive well in moderate indirect light and humidity. This plant is low maintenance, adaptable to many surroundings, and has been certified by NASA as one of the best houseplants for cleaning the air at home.	
2	<i>Spathiphyllum</i> 'Little Angels':	
	The Little Angel peace lily is a miniature variety (dwarf cultivar) that grows to only 12-15 inches tall and wide. It thrives in well-lit areas such as kitchen counters or side tables, and its small, spear-shaped leaves grow on short stalks. In the spring, it produces buds with angel wings that cover a tiny spathe as they rise from the ground.	
3	<i>Spathiphyllum</i> 'piccolino':	
	The Piccolino peace lily is a lovely dwarf tropical houseplant with evergreen leaves up to 20cm in length and 10cm in width, and small white blooms that continuously bloom throughout the year. It is a beautiful, low-maintenance plant addition to any garden, requiring just occasional watering and minimal trimming.	
4	<i>Spathiphyllum</i> 'Picasso':	
	The Picasso peace lily is a rare tropical houseplant with unique tricolor variegation on its leaves. It is a great houseplant because it removes hazardous chemicals like formaldehyde and ammonia from the air and blooms every summer. Even though the plant is rare, it is easy to grow with the right care.	
5	<i>Spathiphyllum</i> 'sensation':	
	The Sensation peace lily is a popular houseplant that thrives in low light and is easy to care for. It is the largest Spathiphyllum cultivar, featuring large, deeply ribbed leaves that promote a calm and peaceful environment while also improving indoor air quality. This makes it an ideal plant for bedrooms, living rooms, and workplaces.	
6	<i>Spathiphyllum</i> 'Patricia':	
	It is a dwarf variety with green foliage and white blooms with pale yellow centers. The mix of white, yellow, and deep green makes living areas look soothing and calm. If you want a bushy plant, consider a different variety since this one may not have full leaves.	
7	<i>Spathiphyllum</i> 'Sonia':	
	The peace lily is a small white plant with slightly curled spathes. Its name reflects its meaning of peace, purity, and healing. There are a hundred different types of peace lilies, and they usually live for just 3-5 years.	

8	<p><i>Spathiphyllum 'Domino':</i></p> <p>It's a large peace lily with lance-shaped leaves that are variegated with white spots. This variety is one of the larger types of peace lilies. It produces white flowers that resemble cones and can grow to be over 15 cm long. The plant may reach a height of 90 cm and is best grown in direct sunlight, although it can also survive in partial shade.</p>	
9	<p><i>Spathiphyllum 'Jetty':</i></p> <p>The Jetty peace lily is a stunning houseplant that will keep your indoor air clean with its long-lasting white blooms and lush, dark green foliage. It is a low-maintenance houseplant that looks great and thrives with minimal care.</p>	
10	<p><i>Peace lily Mauna Loa plant:</i></p> <p>It is a tropical plant that is easy to grow, with large, dark green leaves and a flowering stalk that can reach a height of 2-3 feet. The plant is native to shady, indirect light environments. Additionally, the cultivar 'Mauna Loa' has been awarded the Royal Horticultural Society's Award of Garden Merit.</p>	
11	<p><i>Spathiphyllum 'Blue Moon':</i></p> <p>It is a striking houseplant with glossy green foliage and delicate white blossoms that resemble sails. Originating in South America, this plant thrives in warm and humid conditions and can bring a touch of the tropics to any space.</p>	
12	<p><i>Spathiphyllum 'Bongo Bongo':</i></p> <p>It is a large, exotic peace lily with glossy, dark green leaves that can grow up to 12 inches in length. It produces blooms year-round, with peak flowering occurring in winter and summer. This low-maintenance plant provides benefits such as air filtration, absorption of acetone vapors, promotion of sleep, prevention of mildew, and removal of mold spores.</p>	

Phytochemical analysis

Qualitative analysis of the *S. cannifolium* ethanol leaf extract revealed the presence of sterols in trace amounts. Alkaloids and glycosides were detected to be moderately abundant, whereas triterpenes, flavonoids, saponins, and tannins were abundant (Judith AL., 1988). In the chloroform extract, saponins were detected in trace amounts; flavonoids, alkaloids, and glycosides were found to be moderately abundant; and the presence of sterols was found to be abundant. Triterpenes were not detected in the chloroform extract (Dhayalan A., 2018).

REPORTED PHARMACOLOGICAL ACTIONS

Antimicrobial Activity

S. cannifolium plant samples extracted with methanol and ethyl acetate have indicated positive activity toward *B. subtilis* growth but not *E. coli*. Ethyl acetate extract of *Spathiphyllum cannifolium* leaves showed the highest antibacterial activity and optimization of extraction for antibacterial compound was carried out using this plant (Abdullah E., 2011). The antimicrobial

analyses revealed that the chloroform leaf extract exerted significant bioactivity against *E. coli*, *S. aureus*, *B. subtilis*, and *P. aeruginosa*, whereas the ethanol leaf extract was bioactive against *E. coli*, *S. aureus*, and *B. subtilis* only. The ethanol and chloroform leaf extracts exhibited the highest zone of inhibition against *B. subtilis*. Finally, although the chloroform extract was bioactive against *C. albicans*, both leaf extracts showed negative results against *A. niger* (Dhayalan A, 2018).

Antibacterial Activity

The stalks, leaf, rhizome, and root of *S. wallisii* were extracted by using hexane, dichloromethane, ethyl acetate, ethanol, and methanol. The disc diffusion assay was used to screen the antibacterial activity of *S. wallisii* extracts. Broth dilution and colorimetric assay were used to determine the Minimal inhibitory Concentration (MIC) and Minimal Bactericidal Concentration (MBC) values of extracts. The lowest MIC values at 0.048 mg mL⁻¹ were presented in the stalks extract with dichloromethane, ethyl acetate, methanol and ethanol

against *B. subtilis* TISTR 008, the leaf extracted with hexane, dichloromethane, ethyl acetate, methanol and ethanol against *B. subtilis* TISTR 008; the leaf extracted with ethyl acetate, methanol, and ethanol against *S. aureus* TISTR 1466, the leaf extracted with dichloromethane, ethyl acetate, methanol and ethanol against *S. aureus* PK; the rhizome extracted with methanol against *S. aureus* PK. The lowest of MBC value of 0.048 mg mL⁻¹ was obtained from methanolic rhizome extract against *B. subtilis* TISTR 008 (Rattanasuk S., 2020).

Anti-inflammatory Activity

A nitric oxide test was performed to evaluate the anti-inflammatory activity of the chloroform and water fractions. From the test, the IC₅₀ value of the chloroform fraction is 600.7 µg/ml, and no IC₅₀ value in the aqueous fraction of *S. canifolium*. Sonication for 60 minutes at 40 °C using medium frequency was the optimal condition to perform the extraction of bioactive compounds. After the semi-purification of the initial crude extract by solvent partitioning, the chloroform fraction was found to be positive for anti-inflammatory activity.

Toxicity

True lilies are highly toxic (poisonous) to cats and dogs, but the peace lily, *Spathiphyllum* is only mildly toxic to humans and other animals when ingested. Like many Araceae, it contains calcium oxalate crystals, which can cause skin irritation, a burning sensation in the mouth, difficulty swallowing, and nausea, but it does not contain the toxins found in true lilies, which could cause acute kidney failure in cats and some other animals. Many plants, including peace lily (*Spathiphyllum* spp.), calla lily (*Zantedeschia* spp.) *Philodendron* spp., and *Dieffenbachia* spp. contain insoluble calcium oxalate crystals. These crystals can cause mechanical irritation of the oral cavity. The clinical signs seen with ingestion of these plants include oral pain, difficulty swallowing, hypersalivation, swelling of the oral cavity, vomiting, depression, and inappetence. Clinical signs are temporary and rarely severe and usually respond to supportive care, such as rinsing the mouth with water and offering a small quantity of milk or yogurt. Oral swelling can be treated with an antihistamine, and a protectant such as kaolin/pectin can reduce gastrointestinal irritation. The crystals of calcium oxalate, which is intensely irritating to the skin; and proteolytic enzymes. A prick test did not react between control groups and a patch test with plant parts did not cause irritation, indicating that specific IgE antibodies were produced (Kanerva L., 2010). Removal of traditional pollutants such as ibuprofen (IB) and chemical oxygen demand (COD), total nitrogen (TN), ammonium (NH₄ β-N), total phosphorus (TP) and total suspended solids (TSS) in the case of *S. blandum* It has been reported. This is done through its use as an emergency vegetation cover in fully saturated (FS)

constructed wetlands (CW) at sight level that treat polluted river water (Sandoval L., 2020).

CONCLUSIONS

However, despite the promising findings, further research is needed to fully elucidate the mechanism of action underlying the therapeutic effects of *Spathiphyllum* phytochemicals. In addition, more comprehensive clinical trials are necessary to evaluate the safety and efficacy of *Spathiphyllum*-based treatments in humans. Overall, the study of phytochemical compounds and medicinal properties of *Spathiphyllum* holds great promise for the development of new therapeutic agents with potential applications in medicine and healthcare.

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