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**A Review on Morphology, Phytochemistry, Pharmacology  
and Folk-lore uses of *Diplocyclos palmatus* (L.) Jeffrey.**

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**Abstract**

*Diplocyclos palmatus* Linn. commonly known as Shivalingi is a lesser heard and perennial climber having diversified medicinal values. The present review was undertaken to give detailed note on morphology, phytochemistry and pharmacological studies on the selected plant. Attempt was also made to study the folk-lore uses of the plant.

Key-Words: *Diplocyclos palmatus*, Morphology, Phytochemistry, Pharmacology, Folk-lore uses

**Introduction**

Plants have been used as food, fodder, fuel and medicine since the beginning of the human civilization. It is the main source of medicine in developing countries. The world health organization report says that about 80% of the population in the developing countries still rely upon traditional medicines, especially plant drugs for their recovery from ill-health<sup>1</sup>. Plants are also being used to treat humans, animals and plant diseases from time immemorial, also herbal medicines have been known to man for centuries<sup>2,3</sup>. Therapeutic efficacies of many indigenous plants for many disorders have been described by practitioners of traditional medicine<sup>4,5,6</sup>. In order to quench the thirst for a new drug for an ailment from herbal origin the plants *Diplocyclos palmatus* was chosen.

**Description**

The plant is a vine in the Cucurbitaceae family. It is commonly known as Native Bryony or Striped cucumber. The plant is native to rainforests and dry rainforests (Tropical and subtropical dry broadleaf forests) habitats. It is found in the Malesiaphytoregion, including Papua New Guinea, and in northern Australia. The vine grows in thickets, monsoon forests, lowland and upland disturbed areas, and mountain rain forest. It grows from near sea level to 1,000 metres (3,300 ft) in Australia, in Western Australia, Northern Territory, Cape York Peninsula, and North East Queensland, southwards to north-eastern New South Wales.<sup>7</sup>

*Diplocyclos palmatus* (Family: Cucurbitaceae) is a perennial climber with thin stems growing up to 6m long. Native to Australia, it is more commonly known as the Lollipop Climber or Striped Cucumber (E), Shivalingi (H). The plant is native to Australia, Malesia, Papua New Guinea and Tropical Africa. It is largely distributed in warmer rain forests. It has been recorded in India as growing and spreading in the wild. Shivalingi is a perennial climber with hairless stem, becoming thickened and white dotted on the ridges when older. Leaves are broadly ovate, 3.5-14 x 4-14.5 cm, palmately lobed. Lobes are linear-lance shaped to elliptic, hairless. Leaf stalks 1.5-9.0 cm long. Flowers are small, white or yellowish, male in stalkless clusters of 2-8, along with 5 female flowers in the same axil. Sepal cup is 3-4 mm long in male, 1.5-2.5 mm long in female, sepals smaller than tube. Flower of male larger than female. Fruit is solitary, or in clusters of 2-5. It is ovoid-round, 1.5-2.5 cm. When ripe, it is red with longitudinal white stripes, and reminds one of lollipop, hence the common name. It is found in India, including the Himalayas, at altitudes of 200-1500 m. Flowering: August-October.<sup>8-10</sup>

**Family:** Cucurbitaceae

**Botanical Name**

*Diplocyclos palmatus* (L.) C. Jeffrey

Jeffrey, C. (1962) *Kew Bulletin* 15: 352.

**Synonyms**<sup>11-22</sup>

*Diplocyclos palmatus* (L.) C. Jeffrey subsp. *palmatus*, *Kew Bulletin* 45(2): 238(1990), *Diplocyclos palmatus* subsp. *palmatus* P.S.Green, *Kew Bulletin* 45(2): 238(1990), *Bryonopsis laciniosa* var. *typica* Domin, *Bibliotheca Botanica* 89(4): 1188(1928), *Bryonopsis*

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laciniosa (L.) Naudin var. laciniosa, *L'illustration Horticole*: t. 43(1865), Bryonopsis laciniosa (L.) Naudin, *Annales des Sciences Naturelles, Botanique ser. 5*, 6: 30(1866), Bryonopsis erythrocarpa (F.Muell.) Naudin, *Annales des Sciences Naturelles, Botanique ser. 4*, 18: 194(1862), Bryonopsis laciniosa var. erythrocarpa (F.Muell.) Naudin, *L'illustration Horticole*: t. 43(1865), Bryonia laciniosa L., *Species Plantarum 2*: 1013(1753), Type: Habitat in Zeylona.. Bryonia palmata L., *Species Plantarum 2*: 1012(1753), Type: Sri Lanka, Hermann; lecto: BM. Fide C. Jeffrey Kew Bull. 15: 352 (1962). Zehneria erythrocarpa F.Muell., *Hooker's Journal of Botany & Kew Garden Miscellany 8*: 51(1856), Type: Queensland, Brisbane River, F. Mueller; syn: MEL; Island in Moreton Bay, F. Mueller; syn: MEL. Trichosanthes muelleri Cogn., *Bulletins de L'Academie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique ser. 3*, 14: 346(1887), Type: Habitat in Queensland Australia (coll. Palmer et comm. Cl. baron F. von Mueller).

#### Common name

Cucumber, Striped; Native Bryony; Striped Cucumber

#### Morphological Studies<sup>23-29</sup>

##### Stem

A slender vine not exceeding a stem diameter of 2 cm.

##### Leaves

Leaf blades deeply palmately lobed with 5 major lobes. Leaf blades about 6-13 x 6-12 cm, petioles about 2-4 cm long. Leaves emit an unpleasant odour when crushed. Upper surface of the leaf blade clothed in scattered scabrid hairs. Tendrils 2- branched, leaf-opposed.

##### Flowers

Usually one female flower and three male flowers in each leaf axil. Male flowers about 20 mm diam. Hypanthium 3-4 mm long, calyx lobes about 2 mm long, bases inflated, lobes spreading. Petals 9-10 mm long, densely hairy on the inner surface. Anthers 3-4 mm long, filaments about 2 mm long, very hairy towards the base. Two anthers bilocular, one anther unilocular. Anther locules bent and twisted. Female flowers about 15 mm diam. Calyx lobes about 2 mm long, bases inflated, lobes spreading. Petals about 8 mm long, densely hairy on the inner surface. Staminodes 3, about 3 mm long, densely hairy. Style about 3 mm long and then branching into 3 arms or stigmas.

##### Fruit

Fruits ovoid to ellipsoid, about 20-30 x 15-32 mm, surface ornamented with irregular longitudinal markings. Seeds about 6-10 per fruit, each seed about 6-8 mm long, irregularly shaped, vaguely like tear

drops or bird skulls. Cotyledons about 4-5 mm long. Radicle straight, very short, about 0.8 mm long, much shorter and narrower than the cotyledons.

##### Seedlings

Cotyledons elliptic, about 20-26 x 10-15 mm, petioles about 2 mm long. Petioles and stem above the cotyledons clothed in small recurved trichomes or spines. First pair of true leaves deeply 3-lobed or trifoliolate, margins toothed. At the tenth leaf stage: crushed leaves have an unpleasant odour. Leaf blade deeply lobed with 3-5 main lobes each drawn out into a long acuminate tip at the apex. Stem 'hairs' recurved and resemble miniature spines. Upper surface of the leaf blade hispid, clothed in short hairs.

##### Natural History

The fruits of this species have been suspected of causing illness and death in children.

##### Phytochemistry<sup>30-31</sup>

Phytochemical studies of *Diplocyclos palmatus* shows the presence of alkaloids, flavonoids, triterpenoids saponins, steroids and proteins, resins with, Sugars, starch. The seeds have been reported to contain 12% oil, protein also contains goniothalamine, bryonin, punicic acid and lipids.

##### Pharmacology<sup>31-44</sup>

##### Gynaecological activity

Seed of Shivlingi, Sonth, Kalimirch, Putrajivi and Root bark of Vat is made in powder. 2-5 gms. Powder is taken with water or milk at night once daily for 21 days, after completion or beginning of menstrual cycle.

##### Antiasthmatic activity

The antiasthmatic activity of 70% alcoholic extract of *Diplocyclos palmatus* was done by mesenteric mast cell count by Atopic allergy method in rats. The number of intact and disrupted mast cells, in ten randomly selected fields for each tissue was counted. Three slides per each animal were studied.

##### Analgesic Activity

The analgesic activity of the 70% alcoholic extract of dried aerial parts of the plant *Diplocyclos palmatus* was carried out in mice using Eddy's hot plate analgesio meter. After administration of test and standard drug, the test for analgesia was carried out by placing the mice on electrically heated plate at 55degreeC +/- 0.5 degree C and noting the signs of discomfort, i.e., it may lick its fore paws or jump out of the plate. The time was noted in seconds. Test was carried out similarly for animals of control group. The observations were made at 30' and 60' It was found that *Diplocyclos palmatus* showed fairly good analgesic activity at 30 and 60 minutes when compared with standard drug.

**Anticonvulsant Activity**

For inducing convulsion by electro shock, a rectangular pulse current of high voltage (150 mA) is employed. The electro shock was given to each rat for 0.2 seconds with the help of convulsion meter through pinna electrodes. Drugs likely to be effective in Grandmal epilepsy usually confer protection against electrically induced convulsion in animals. Group I received carbamazepine (40mg/kg body weight) and Group II received 0.2ml of 1% Tween 80 solution and served as standard and control respectively. Similarly Group III received 500mg/kg body weight of 70% alcoholic extract of *Diplocyclos palmatus*. The electro shock was given to each rat for 0.2 seconds with the help of convulsion meter through pinna electrode and the effects were observed.

**Antimicrobial activity**

Ethanol extracts of different parts of *Diplocyclos palmatus* through well diffusion method. There fine responses of the organisms to the leaf and stem extracts compared with standard antibiotics, while organisms did not show any susceptibilities to fruit and seed extracts. *S. aureus*, *M. luteus*, *B. cereus* and *P. aeruginosa* were susceptible to leaf and stem extract at all concentrations except *P. aeruginosa* for 10 mg/ml. *E. coli* and *S. typhimurium* were resistant to all extracts. Judging by the diameter of the zone of inhibition *B. cereus* and *S. aureus* were identified as the most susceptible organisms the stem and leaf extracts of *Diplocyclos palmatus*. In general antibacterial activity increases with increase in concentration of extract as evident by the zone of inhibition.

**Antivenom and Antidote activity**

50g of leaves ground to paste. 1-2 spoonfuls of paste are administered with betel leaves immediately after bite. It is given thrice a day until the patient gets relief. Avoid sleep and head bath till the patient gets relieved from bite.

**Anti-inflammatory Activity**

The dried powdered plant material was extracted with chloroform in a Soxhlet extraction apparatus. The solvent was removed under reduced pressure and semisolid mass was obtained (yield 14.25%). The extract showed positive test for steroids, triterpenoids and lipids. The extract at the different doses of 50, 100 and 200 mg/kg was suspended in aqueous Tween 80 solution (2%) and indomethacin (10 mg/kg) in saline used for the present study.

**Folk-lore uses**<sup>45-50</sup>

Lingini or Shivalingi has a number of useful medicinal properties and usages. It is considered bitter, aperient

and tonic and it is commonly used for relieving bilious attack. The leaves of the plant are applied topically for getting relief from inflammations. The Indian women sometimes take the seeds in combination with other plant drugs for helping conception and prevent miscarriage. The practitioners of Ayurvedic medicine use the plant's fruit as an aphrodisiac and tonic, while in Siddha; the entire plant is used for getting relief from constipation. Seeds are use in sterility due to blocked tubes in women Snake bite Root Fever Stomach ache External abscess Fruits are used for Diarrhoea.

**Conclusion**

The present review thus highlights the morphological, phytochemical, pharmacological and fol-lore uses of the selected medicinal plant.

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