



UNLOCKING THE THERAPEUTIC POTENTIAL: A REVIEW PROPERTIES OF DIPLOCYCLOS PALMATUS

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Abstract :

About 60% of the world's population uses traditional medicines. This has led to people exploring the immediate natural environment and trying out many plants to develop a variety of therapeutic agents. The medicinal plant market itself is growing by 20-30% annually. The growth rate of this product in the global market encourages manufacturers to produce pure medicinal plants. *Diplocyclos palmatus* Linn medicinal plants with numerous therapeutic effects. It is the most widely grown plant throughout India. Traditionally it is used as an analgesic, gynecological, antidote, antivenom, anti-asthmatic, anti-inflammatory, anticonvulsant, and antimicrobial agent. According to the literature, no in-depth work has been carried out in the field of pharmacogenetic and phytochemical testing. *Diplocyclos palmatus* Linn, commonly known as Shivlingi, is a lesser-known grape variety with potentially various medicinal values. This review aimed to provide detailed information about the morphological, phytochemical, and pharmacological studies of the selected plant.

Keywords: *Diplocyclos palmatus*, Therapeutic potential, Phytochemical, Pharmacological

INTRODUCTION

India has one of the richest biodiversity in the world and is used as a living resource for medicinal plants. Due to the availability of a large number of traditional systems Since Vedic times, knowledge about the uses of these natural resources has increased regularly. People have always gotten their food from the forests, housing, clothing, decorations, religious beliefs, and most importantly healthcare. Different tribal communities have their endemic systems for treating the diseases to which they are exposed they live mainly in forest and hilly areas and depend on these wild medicinal plants Firstly, due to the lack of modern medical facilities, measures the effectiveness of their methods treatments without side effects and diverse knowledge of traditional methods native plant treatments and basic health care for safety reason ¹. India has vast resources of herbs used for various types of treatments and preparations and is widely used in Ayurveda, Unani, Siddha, Sowa Rigpa, and Homeopathy. There are around 25,000 effective herbal remedies in traditional and folk medicine in India, used by over 1.5 million practitioners in India. In India, preparations and traditional herbal preparations, the annual demand of which exceeds The manufacturing of natural health products takes place in more than 7,800 units. 2,000 tons of raw medicinal plants ². In the last year. Plants contain various phytochemicals that have shown antioxidant properties, such as phenols, flavonoids, carotenoids, vitamins, terpenoids, and nitrogenous compounds³. *Diplocyclos palmatus* (cucurbit family) is a neglected medicinal plant commonly known as shivalingi and lollipop plant. The leaves and fruits are consumed as vegetables in Kenya and Southeast Asia. Traditional doctors used parts of this plant to cure various diseases. The fruit has laxative and expectorant properties and is used primarily in reproductive medicine to treat impotence, female infertility, and vaginal discharge. The seeds have aphrodisiac, antipyretic, and anti-inflammatory properties and are used to facilitate conception in women ^{4,5}. It is also used to treat coughs, flatulence, rheumatic pains, asthma, skin diseases, and snake bites. The plant has gynecological, antispasmodic, antitoxic, detoxifying, antimicrobial, anti-dermatophytes, analgesic, and antiarthritic properties ^{6,7,8,9}. Infertility has been a widespread phenomenon since ancient times and may have existed since human existence. Every human being has a deep and innate need to maintain their race. Depending on where you live, infertility affects 8-12% of couples worldwide. According to WHO, the incidence of primary infertility in India ranges from 3.9 to 16.9%. When faced with infertility, couples seek help from traditional medicine, which has been practiced for thousands of years, as Ayurveda enjoys great respect and trust in this field¹⁰.

Taxonomy of the Plant :-

Domain:	Eukaryote
Kingdom	Plantae
Subkingdom	Viridaeplantae
Phylum	Tracheophyte
Subphylum	Euphyllophyte
Infraphylum	Radiatuses
Class	Magnoliopsida
Subclass	Dilleniidae
Superorder	Violanae
Order:	Cucurbitales
Family	Cucurbitaceae
Synonyms	Shivlingi

Morphological character

Stem: Extremely wide, thin, serrated, labor intensive. The rings are thin, striped, and glabrous.

Leaves: membranous, 10-15 cm long, stretched out, green above and covered with steam, lighter or almost smooth below. Braided low at the base. 5-lobed process, elongated and lanceolate, the main nerve is sometimes serrate. Petioles 2.5 to 7.5 cm long, striped, thin.

Male flowers: in small clusters of 3-6 pieces each, stem 5-20 mm long, thread-like, glabrous. The calyx is hairless, about 205 mm long and the teeth are pinnate. Crown 3-5 mm long, divided into segments, beating, ovoid, intense, hairy, simple in females or with several or more stalks, shorter than in males.

Fruits: The fruits are subsessile organic products, about 1.3 to 205 cm wide, smooth, spherical, light green-blue in colour, crossed by broad vertical lines and with longer seeds of about 5-6 mm with a yellowish cocoa colour.

Seed

Color: Yellowish cocoa

Appearance: The top of the seeds resembles “Shivlingi”

Size: Length 5-6m¹¹.



Fig1. *Diplocyclos palmatus* (L) Jeffrey



Fig2. Leaves and flower of *Diplocyclos palmatus*



Fig3. Seeds of *Diplocyclos palmatus*



Fig4. Fruits of *Diplocyclos palmatus*

Botanical Description

Diplocyclos palmatus(L.) Jeffrey w Kew Bull. 15: 354,1962; Babu, Herbe. Florida Dehra Dun. 97.1977; Swami e Gupta, Floryda Udhampur 160. 1998. *Bryonia palmate* L., sp. PI-NUMBER 1012.1753 The number of *Bryonopsis laciniosa* is increasing. no (L) Naudin , 1956 ChakravarteyRecNerw. Survive India 171:138. 1959 (as var. Walker (Chakrav.) Babu). Grass, perennial, vine. The stem is several meters long and bare. Crispy leaves; Leaf blade 5-13 × 6.5-14 cm, heart-shaped at the base; Lobes 3-5, lateral lobes generally flat, bilobed, narrowly lanceolate-elliptical, dentate, acute to sub acuminate. 2 to 8 male flowers, clusters mixed with 0 to 4 female flowers; calyx lobes pipe-shaped, 0.5 to 1 mm long; The crown lobes are egg-shaped, 5 to 10 mm long and white to green-yellow in color. Female flowers with 1 to 5 mm long stems; 1 mm long stem tubes; Ovary 3 to 4 mm long. Fruits 2-2.5 cm long, simple or grouped, red, ellipsoid, with 7 white longitudinal stripes. Seeds 5 mm long, ellipsoid, with F1 and F beaks. *Diplocyclos palmatus*: September-December.

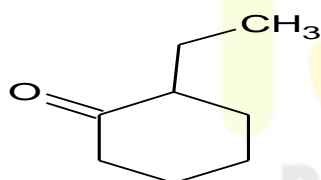
Distribution

Diplocyclos palmatus(L.) C. Jeffrey occurs throughout India, Bhutan, China, Nepal, Pakistan, Thailand, southern Japan, Sri Lanka, the Philippines, Indonesia, Peninsular Malaysia, Papua New Guinea.

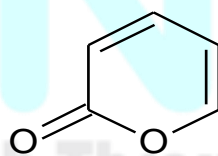
Chemical composition

Diplocyclos palmatus(L.) C. Jeffrey: The entire plant contains Bryonin¹² and Fatty acids¹³. Fruits contain Chlorogenic acid, Gallic acid, and Protocatechuic acid¹⁴. Seed oil contains Punicic acid¹⁵, goniothalamine, glucomannan, anthraquinone, anthocyanins, coumarins, emodin's, serpentine, oleic acid, hexanoic acid, 2-ethyl cyclo-hexanon, 1,2-Benzenedicarboxylic acid, octadecanoic acid, sulphurous acid, n-Nonaldehyde, 3- octanoic acid, 9-octadecenoic acid, 2H-pyran-2-one,2(3H)-Furanone, Acetic acid, 2,4-Decadienal, cyclohexanone, octanoic acid

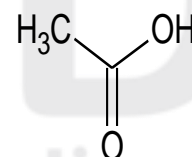
Chemical Compounds Structures of *Diplocyclos palmatus*¹⁶



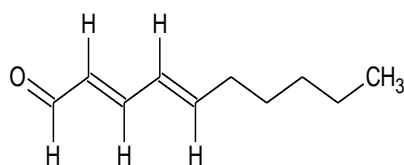
2-Ethyl cyclohexanone



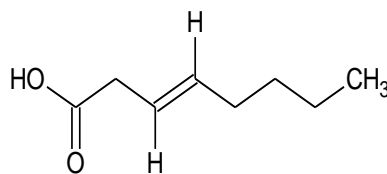
2H-Pyran-2-one



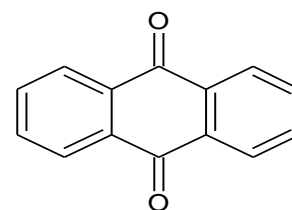
Acetic acid



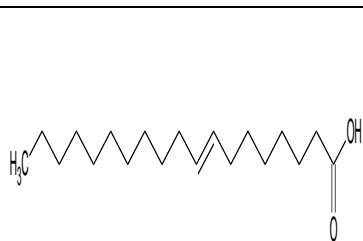
2,4-decadienal



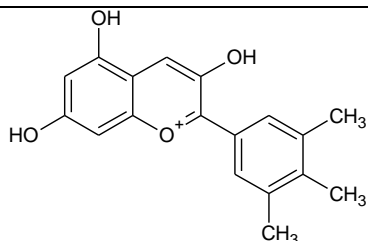
3- octanoic acid



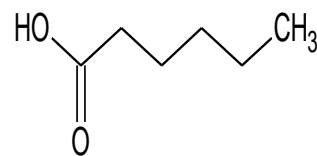
Anthraquinone



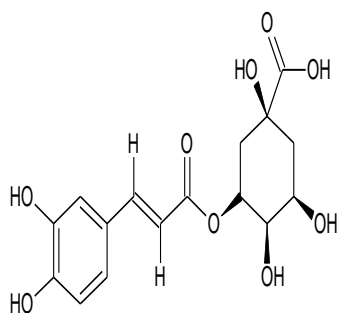
Oleic acid



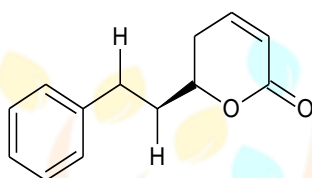
Anthocyanins



Hexanoic acid



Chlorogenic acid



Goniotalamin



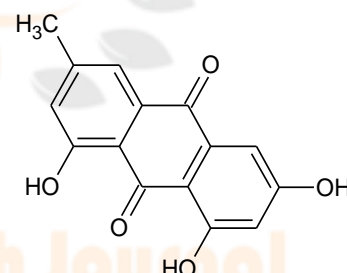
n-Nonaldehyde



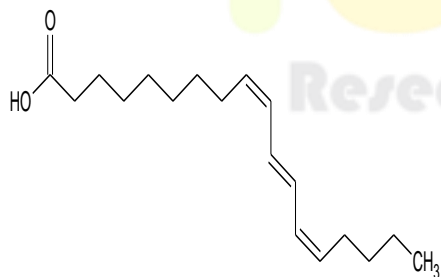
Octadecanoic acid



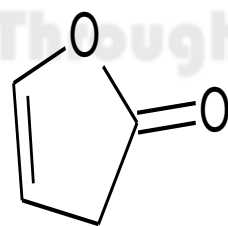
Octanoic acid



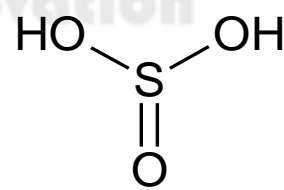
Emodin's



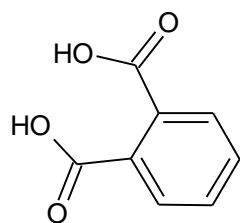
Punic acid



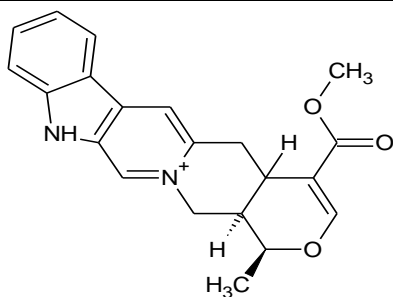
2(3H)-Furanone



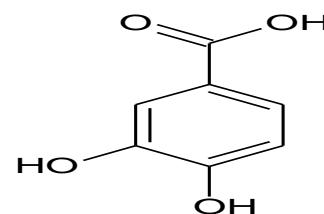
Sulphurous acid



1,2-Benzenedicarboxylic acid



Serpentine



Protocatechuic acid

PHYTOCHEMICAL SCREENING

Phytochemical studies were carried out on ethanol and aqueous extracts various parts of *Diplocyclos palmatus* fruits using various standard methods to detect secondary metabolites such as alkaloids, tannins, flavonoids, and triterpenoids. Thin layer chromatography (TLC) using mobile phase was also performed for components identified as active¹⁷.

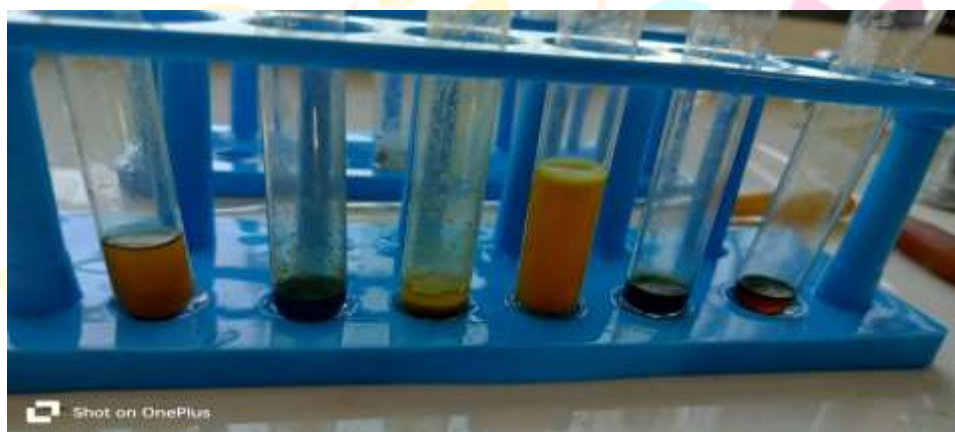


Fig 5. Phytochemical test for stem

Table 1: Preliminary phytochemical study of *Diplocyclos palmatus* stem

Phytochemical constituents	Aqueous extract	Ethanol extract
Alkaloids	Positive	Positive
Triterpenoids	Negative	Positive
Flavonoids	Positive	Negative
Tannins	Negative	Negative
Saponins	Positive	Positive
Sugars	Negative	Negative
Starch	Negative	Negative
Steroids	Positive	Positive
Proteins	Positive	Positive
Resins	Negative	Negative

PHARMACOLOGICAL ACTIVITY

Gynaecological activity

The root bark seeds of Shivlingi, Sonth, Kali Mirch, Putrajivi and Vat are made into powder. Take 2 to 5 grams of powder with water or milk once daily in the evening for 21 days, after the end or start of the menstrual cycle^{18,19}.

Antiasthmatic activity

The Antiasthmatic effect of 70% alcoholic extract of *Diplocyclos palmatus* was determined by counting mesenteric mast cells using the atopic allergy method in rats²⁰. The number of intact and damaged mast cell was counted in ten randomly selected fields for each tissue. Three preparations were tested per animal²¹

Analgesic Activity

The analgesic effect of the 70% alcoholic extract from the dried aerial parts of the plant *Diplocyclos palmatus* was tested on mice using the hot painkiller, Eddy. After administration of the test and standard drugs, an analgesic test was performed by placing mice on an electrically heated plate at 55°C +/- 0.5°C and showing signs of discomfort, e.g. B. pain was recorded. It may lick its front paws or jump off the plate. The time is expressed in seconds. A similar study was carried out on control group animals. Observations were made after 30' and 60'. It was found that *Diplocyclos palmatus* had a fairly good analgesic effect after 30 and 60 minutes compared to the standard drug^{22,23}.

Anticonvulsant Activity

A rectangular pulsed high voltage current (150 mA) is used to induce convulsions by electric shock. Each rat received an electric shock for 0.2 seconds using a vibrometer via ear electrodes. Medications that may be effective in treating granny epilepsy generally protect against electrically induced seizures in animals. Group I received carbamazepine (40 mg/kg body weight) and group II received 0.2 ml 1% Tween 80 solution and served as standard and control, appropriate. Group III also received a 70% alcoholic extract of *Diplocyclos palmatus* at a dose of 500 mg/kg body weight. Each rat was subjected to electric shock with a vibrometer via an ear electrode for 0.2 seconds and the effects were observed^{24,25}.

Antimicrobial activity

Ethanol extracts from different parts of *Diplocyclos palmatus* using the well diffusion method. The response of the organisms to leaf and stem extracts was good compared to standard antibiotics, but the organisms did not show sensitivity to fruit and seed extracts. *S. aureus*, *M. luteus*, *B.cereus* and *P. aeruginosa* were sensitive to leaf and stem extract at all concentrations, except for *P. aeruginosa* at 10 mg/ml. *Escherichia coli* and *S. typhimurium* were resistant to all extracts. Based on the diameter of the inhibition zone, *B. Cereus* and *S. Aureus* was the most liable organisms recoup from the stem and leaves of *Diplocyclos palmatus*. In general, antibacterial activity enhance with enhancing concentration^{26,27,28}.

Antivenom and Antidote activity

Grind 50 g of leaves into a paste. Immediately after the bite, 1-2 tablespoons of the paste are administered along with the betel leaves. The patient receives it three times a day until he feels better. Do not sleep or wash your hair until the sick person has recovered. from the bite²⁹. The dried powdered plant material was extracted with chloroform in a Soxhlet extractor. The solvent was removed under reduced pressure to give a semisolid mass (14.25% yield). The extract tested positive for steroids, triterpenoids, and lipids. The extract was suspended at different doses of 50, 100, and 200 mg/kg in an aqueous solution of Tween 80 (2%) and indomethacin (10 mg/kg) in the saline solution used in the present study³⁰.



Fig6. Pharmacological activity of *Diplocyclos palmatus*

PHARMACOLOGICAL ACTION TABLE

Pharmacological action	Part used of <i>Diplocyclos palmatus</i>
Anti- asthmatic activity	The 70% ethanolic extract of <i>Diplocyclos palmatus</i> (L)C. Jeffrey shows an anti-asthmatic effect. ³¹
Anti-convulsant activity	The alcoholic extract of <i>Diplocyclos palmatus</i> (L) C. enhances the antispasmodic effect.
Anti- diabetic activity	Antidiabetic activity detected in <i>Diplocyclos palmatus</i> in streptozotocin-induced diabetic mice ³² .
Anti-inflammatory activity	Alcoholic extract of <i>Diplocyclos palmatus</i> (L) seeds Jeffrey. Anti-inflammatory effect in animal models ³³ .
Anti-microbial activity	Ethanol extract from leaves and stem parts of <i>Diplocyclos palmatus</i> shows antimicrobial activity using well diffusion method ³⁴ .
Anti-oxidant activity	<i>Diplocyclos palmatus</i> (L) C. Jeffrey was recognized in the fruit extract as a novel antioxidant.
Anti-venom and Antidote activity	<i>Diplocyclos palmatus</i> leaf paste with betel leaves showed antivenin and curative activity. ³⁵

AYURVEDIC PROPERTIES

Raspanchak: Course: Katu, Tikta

Corresponding to Venkateshwarlu et al. *D. palmatus* is a famous Ayurvedic medicine used in Ayurveda as an aphrodisiac, tonic, vaginal discharge agent and antipyretic. The plant has various properties like anti-smelly (Durgandha), thermogenic (Tapakara), anti-inflammatory (Shotharodhi), alternative, purifying, tonic and rejuvenating properties and helpful in disturbed states of Vata and Pitta doshas, cough, Flatulence, skin diseases, inflammation and general weakness and is also useful in SidhmaKushta (a type of leprosy)^{36,37}.

CONCLUSION

Literature research has shown that the Shivlingi plant has great medicinal importance. It is considered a fantastic treatment for infertility. The seeds of these plant are used for medicinal purpose. In Ayurveda, the seeds of the *Diplocyclos palmatus* plant are most important to cure various conditions including male and female infertility, obesity, weight loss, diabetes, inflammation, constipation, and abdominal discomfort. Reports have shown that plants are associated with various therapeutic and pharmacological properties such as anti-diabetic, androgenic, anti-asthmatic, antipyretic, antimicrobial, and antibacterial effects. However, little research has been conducted on this plant regarding its phytochemical components and therapeutic properties. Therefore, researchers and scientists should pay more attention to plants in experimental and clinical studies to identify their beneficial pharmacological properties for the development of important therapeutic agents

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