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A REVIEW ARTICLE ON *PALASH* (*BUTEA MONOSPERMA* (LAMB.)TAUB.)

Dr. Ayushi Biyala[*1], Prof. (Dr.) Chandan Singh[2], Dr. Rajendra Prasad Purvia[3]

[1]PG Scholar, [2]Professor and HOD, [3]Associate Proffessor,

[1]Department of Dravyaguna Vigyan, Post Graduate Institue of Ayurveda, Dr.Sarvepalli Radhakrishan Rajasthan Ayurveda University, Jodhpur (Rajasthan), 342037, India.

[2,3]PG Department of Dravyaguna Vigyan, Post Graduate Institue of Ayurveda, Dr. Sarvepalli Radhakrishan Rajasthan Ayurveda University, Jodhpur (Rajasthan), 342037, India.

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***Corresponding Author**

Dr. Ayushi Biyala

Department of Dravyaguna Vigyan, Post Graduate Institue of Ayurveda, Dr.Sarvepalli Radhakrishan Rajasthan Ayurveda University, Jodhpur (Rajasthan), 342037, India.

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ABSTRACT

Palash also known as *Butea monosperma* (Lamb.) Taub. is found in the northern part of India. It is a medium-sized deciduous tree. The plant also known as *Palash* or “dhak tree” or "flame of the forest," belongs to the Fabaceae family. It is utilized at several festivals and for religious worship in the majority of India's regions. Palash has an astringent (*kashaya*), bitter (*tikta)*, and pungent *(katu*) taste (*Rasa*); its *veerya* is *ushna*, and its *vipaka* is *katu*. It aggravates the *pitta doshas* while calming the *kapha* and *vata doshas*. Numerous illnesses, including *Trishna* (thrist), *Atisara* (diarrhea), *Pradara* (leucorrhea), *Jwara* (fever), *Charmarog* (skin disorders), *Astibanga* (fracture), *Vatarakta* (gout), *Kushta* (leprosy), *Apasmara* (epilepsy), and *Prameha* (diabetic), are reported to benefit from *Palash* according to literature. The ‘Palash ‘tree is known to possess important phytoconstituents like flavonoids, chalcones, alkaloids, tannins. The herb possesses anthelmintic, antibacterial, aphrodisiac, and anti-asthmatic properties. "Butea gum" or "Bengal kino" are the red juices that the bark of *palash* produces. There has been a global resurgence of interest in herbal medicine.

KEYWORDS: *Butea monosperma* (Lamb.) Taub., *Palash* Antiinflammatory, Skin disorder, *Ayurveda.*

INTRODUCTION

India is regarded to be the guru of highly practised knowledge of herbal name. There is a place called *Palashi*(West Bengal) INDIA, got its name from a red coloured tree called *Palash*. It was the site of the magnificent, famous Battle of Plassey. According to the locals, a tree represents the god of fire, *Agnidewa*, that is *palash*. According to *Narhari* in *Raj Nighantu*, there are four different types of Palash: *Rakta* (red), *Peeta* (yellow), *Shweta* (white), and *Neela* (blue).[1]

Shweta, *Nila*, and *Pita* are the rarest among the aforementioned kinds. *Rakta Palash* flowers are utilized during India's "Holi," or festival of color. The underlying idea was that, the color made from flowers is natural, healthy for the skin, and has no negative effects.

CLASSIFICATION OF *PALASH* IN *AYURVEDA* LITERATURE

Nirukti पलाश: प्रशस्तानि पलाशानि पत्रानि संनत अस्य इनत.[2] Palash, 'the tree having beautiful and useful leaves'. ***Vyutpatti***- नकंशुक क्रशत: प्रकाश्यात कमर्ण.[3]

The Sanskrit word 'Palash' literally means looks like a flesh or blood.[4]

Samhita Era

Charak Samhita: *Palash* is not mentioned in *Mahakasaya* in the *Caraka Samhita*.[5] However, under the sole term *Palash* in the *Charak Samhita*, it is listed in the *Sutra*, *Chikitsa*, and *Siddhi sthana* for the treatment of ailments like *Arsha*, *Atisar*, etc.

Susruta Samhita: Palash is described in *Rodhradi*, *Muskakadi*, *Ambasthadi*, and *Nyagrodhadi Ghan* of the *Susruta Samhita*.[6] *Kashypa Samhita*: This *Samhita* uses the *kwath* of *Palash* to grant children mukti from *Sheetaputana grah*. *Ashtanga Hridaya :Palash* is mentioned in *Rodhradi*, *Muskakadi*, *Ambasthadi*, and *Nyagrodhadi Gana* of *Ashtanga Hridaya*.[7] *Astanga Sangraha: Rodhradi*, *Muskakadi*, *Ambasthadi*, and *Nyagrodhadi Gana* all make reference to *palash*.[8]

PALASH IN *NIGHANTUS*

Raj nighantu: In *Karviryadivarga*, *palash* flowers and beeja are mentioned in relation to *Kushtha*and *Pama* (skin disorders).

Bhavaprakash nighantu: *Palash* Flowers and Beeja as *Krumighna* and *Kushth*

Dhanvantari nighantu-Navpatra of *palash* located in *Aamardi Varga* as *Krumighna* for *Pliha*,

Gulma, *Grahani*, *Arsha*, and Beeja of *palash* in *Amradi* as *Krumighna*. *Shodhal nighantu*- Kanda of *palash* in *aamradi Varga* as *Rasayan* and beeja of *palash* as *krumighna. Madanpal nighantu*: Flowers of *palash* in *Vatadi varga* as *Grahi* and Beeja of *palash* in *Vatadi varga* as *Krumighna.*

Vernacular names of *Palas*[9]

English-Flame of forest, Bastard teak, Hindi-Dhak, Palas, Assamese-*Palash* Bengali-Palas, Palash Gaccha, Gujarati-Khakara, Khakda, Khakhado, Khakhar, Khakar, Kesuda, Kannada-Muttagamara, Muttug, Muttulu, Konkani-*Palash* Malayalam Plasu, Pilacham, Palashin, *Palash* Marathi-Palas, Oriya-Porasur, Punjabi-Chichara, Dhak, Palas, Sanskrit *Palash* Kimshuk, Vakrapushpa, Bhramavruksha, Raktapushpa, Tamil-Palashmaram, Chamata, Telugu-Modugai, Paladu, Chettu, Bihari Faras, Paras, Kashmiri-Dhak, Urdu-Dhak, Tes.

Synoyms of *Palash*

Kimshuk -Flowers looks like beak of parrot

Palash -Leaves are beautiful

Triparna- Three foliate leaves

Raktapushpa -Flowers are of red colour ***Yadnyik***- Used in *yajna* since *vedic* period

Beejsneha -Seeds are oily

Samidvara -Describing its usefulness in rituals as samidha Krumighna- Pacifies krimi

Properties (*Rasapanchak*) of palash[10]

Flower -*Ras -Tikta, Katu, Kashay*

Guna -Laghu, Snigdha

Veerya –Sheet Vipaka -Madhur

Doshaghnata -Kaphapittashamaka

Bark, Leaf, Seed, Gum *–Rasa-Katu, Tikta, Kashay Guna-Laghu, Ruksha, Veerya-Ushna Vipaka –Katu*

Doshaghnata- Kaphavatashamak.

***Karyakarana meemamsa*[11]**

Palash is pungent (*katu*), bitter (*tikta*) and astringent (*kashay*) in taste (*Rasa*), pungent in the post digestive effect (*vipaka*) and has hot (*ushna*) potency (*virya*). It alleviates *kapha* and *vata. doshas*, but aggravates the *pitta doshas*. The flowers of *Palash* are bitter, pungent and astringent in test, sweet in the post digestive effect and have cold potency. So it alleviates

pitta and *kapha dosha* and *vata doshas.*

MORPHOLOGY OF PALASH (*Butea monosperma* (Lamb.) Taub.)

It is a slow-growing tree that gains a few feet year when it receives full sun. With a cluster of blossoms, this tree can reach a maximum height of 40 to 50 feet. This plant has pinnate, compound leaves with three leaflets that are widely elliptic and obliquely oval in shape. The tree has a robust trunk and measures about 15 meters in length. Soft, smooth gray or brown hairs envelop the twigs. The bark is ash-colored. The three leaves are stipulate, large, and foliate. 10 to 15 cm is the length of the petiole. The leaflets are obtuse, exquisitely silky, veined underneath, and may be cunnate or deltoid.

Habitat of Palash- It is native to Indian subcontinent and Southeast Asia

Taxonomy of Palash(*Butea monosperma* (Lamb.) Taub.)[12]

Kingdom	Plantae (plants)
Subkingdom	Angiosperms
Superdivision	Eudicots
Division	Rosids
Order	Fabales
Family	Fabaceae
Genus	Butea
Species	B.monosperma

PHYTOCHEMICALS CONSTITUTENTS OF *PALASH*

Plant part	Phytochemical composition
Leaves	Glucoside, Kino-oil contain **oleic and lignoceric acid**, linoleic acid and palmitic Kino-oil containing palmitic, oleic, lignoceric acid, linoleic acid
Flowers	**Glycoside** ,butrin, butein, butin, isobutin, coreoopsin, monospermoside and their isoderivatives and sulphurein, palastrin (Mishra, 2016). **Triterpene**, varoius flavonoids butein, butin, isobutrin, coreopsin, isocoreopsin, sulphurein, monospermosideand, isomonospermoside (More et al., 2012), chalcones, aurones, isobutyine (Tiwari et al., 2019), palasitrin, 3',4',7-trihydroxyflavone. Myricyl alcohol, phenylalanine, stearic, aspartic acid, palmitic,

	lignoceric acids, arachidic, glucose, fructose, alanin, histidine
Seed	A nitrogenous acidic compound, along with palasonin is present in seeds. It also contains monospermoside (butein 3-e-d-glucoside) and so monospermoside, oil (yellow, tasteless), **proteolytic** and **lipolytic enzymes**, plant proteinaseand polypeptidase
Gum	**Tannins**, mucilaginous material, pyrocatechin
Bark	Kino-tannic acid, Gallic acid, pyrocatechin, palasitrin, and major glycosides as butrin, butolic acid**, cyanidin**, **histidine, lupenone, lupeol**, medicarpin, miroestrol, palasimide
Stem	**Stigmasterol-β-D-glucopyranoside** and nonacosanoic acid
Resin	Ester
Saponin	Polyphenols

PHARMACOLOGICAL ACTIVITIES OF *PALASH* (*Butea monosperma* (Lamb.) Taub.)[13]

PLANTS PART	EXTRACT	PHARMACOLOGICAL ACTION
LEAVES	Aqueous	Antifilarial[14]
	Ethanolic	Antidiabetic, antioxidant[15]
	Petroleum ether, chloroform	Antiinflammatory, antioxidant[16]
BARK	Ethanolic	Anti-diarrhoeal, Wound healing activity, Anti Stress[17]
	Methanolic	Anti-inflammatory, Effects on hormone level, Anti-ulcer[18]
FRUIT	Methanolic	Hypoglycemic effect[19]
	Pippali rasayana	Antihelminthic effect[20]
FLOWER	Aqueous	Anticancer, Hepatoprotective effect [21]
	Petroleum	Anticonvulsant [22]
	Ethanolic	Antihyperglycemic, antioxidant potential [23]
	Methanolic	Anti-inflammatory, antioxidant effects, Antidopaminergic activity, Free radical scavenging effect [24,25]
SEED	Alcoholic	Hormone balancing effect [26]
	Methanolic	Antifertility effect, Anthelmintic effect [26,27]
	Ethanolic	Anti-hyperglycemic and Anti-hyperlipidemic[28]

THEREPEUTIC USE[29]

1. Urinary obstruction- Heat the flowers and tie them on the colony area.
2. Its seeds are beneficial in roundworm. Quantity3-6 gram
3. Skin diseases like ringworm- apply the seeds with lemon juice.
4. Diarrhoea: Use its gum. Quantity 5 grams.
5. Urinaryobstruction- Drink the decoction of flowers along with Psoraseed10 ml.
6. Give decoction on Agnimandya, Grahani, Arsh-bark. 20 ml.

7. Epilepsy- Give Nasya of seeds.
8. Use seed oil in dhwajabhanga-.
9. Shukra Durbalya-Use its gum with sugar candy. Use 5 grams
10. leucorrhea flowers. 5 grams.
11. Use palash flowers in fever and burn.

FORMULATIONS of *Butea monosperma* (Lamb.) Taub. (*PALASH*)[29]

1. Palashbeejadichurn
2. Palashksharghrit,
3. Naitrasudharshan extract
4. Krimikuthar rasa,
5. Mahanarayan taila
6. Palashbijadi churna
7. Palashkshara ghrita
8. Kumkumadi Tail

Doses of various formulations of *Palash*[30]: Decoction (bark)- 50-100ml, Juice (leaf)-10-20ml, Flower powder- 3-6gm, Gum-1-3gm, Seed powder 3-6gm.

Pharmacological Properties of *Palash* (*Butea monosperma* (Lamb.) Taub.) RECENT RESEARCH ON *PALASH*

FLOWERS

a) Antitumor action.[31]

An intraperitoneal injection of an aqueous extract of *Butea monosperma* (Lamb.) Taub. flowers was given to the X-15-myc onco mice, which reduced serum VGEF levels and preserved liver architecture and nuclear morphology, demonstrating antitumorgenic activity. Liver sections examined by anti-ribosomal protein S27a antibody immunohistochemistry showed that this proliferative signal had been eliminated from the tumor tissue after therapy.

b) Anticonvulsant action.[32]

Column chromatography has been used to separate the petroleum ether extract of *Butea monosperma* (Lamb.) Taub. into several polarity fractions, including methanol, n-hexane, and ethyl acetate. A fractionated portion of The petroleum extract of BM shown anticonvulsant properties against seizures brought on by lithium sulfate-pilocarpine nitrate, methyletetrazole (PTZ), and maximal electroshock (MES). Furthermore, *Butea monosperma* (Lamb.) Taub.

triterpene showed antidepressant properties.

LEAVES

c) Antidiabetic action.[32]

Alloxan was administered to male rats to induce diabetes, while oral administration of *Butea monosperma* (Lamb.) Taub. leaf ethanolic extract showed effects that prevent diabetes. BM extract significantly decreased blood glucose and increased the activity of antioxidant enzymes following 45 days of treatment at a dose of 300 mg/kg, indicating that *Butea monosperma*.

(Lamb.) Taub. leaves possessed potent hypoglycemic and antioxidant qualities.

d) Anti-inflammatory properties.[33]

Butea monosperma (Lamb.) Taub. extracts have been shown in numerous animal studies to have anti-inflammatory properties in several types of inflammation, such as granuloma development brought on by cotton pellets and paw edema caused by carrageenan. These investigations have. demonstrated decreases in tissue damage and inflammatory indicators after *Butea monosperma.*

(Lamb.) Taub. extract administration.

Other pharmacological actions of Palash(*Butea monosperma* (Lamb.) Taub.)

e)Antimycobacterial action

Bioactive flavonoids found in *Butea monosperma* (Lamb.) Taub. flowers, including butein, isoliquiritigenin, monospermoside, dihydromonospermoside, and dihydrochalcone, demonstrated antimycobacterial action.[34] Its antifungal effectiveness against a variety of fungus species was demonstrated by the study.[35]

f) Antimicrobial action[36]

5,7-dihydroxy-3,6,4-trimethoxy flavone-7-O-α-L xylopyranosyl (1→3) has antibacterial properties.(1→4) O-α-L-arabinopyranosyl-O-β-D Antimicrobial action was demonstrated by galactopyranoside. *Butea monosperma* (Lamb.) Taub. seed oil has antimicrobial properties hat can combat harmful bacteria and fungi. Thus, the oil has both bactericidal and fungicidal qualities.

g) Antidopaminergic action[37]

The isoflavone-isolated methanolic extract of *Butea monosperma* (Lamb.) Taub. exhibited antidopaminergic activity, inhibited the rats' foot shock-induced aggression, and enhanced the

dose-dependent catalepsy caused by haloperidol.

h) Hepatoprotective effect

The hepatoprotective effect Wagner et al., demonstrated the hepatoprotective activity of isobutrin and butrin isolated form B.monosperma flowers 58. The study also confirmed by Sharma and Shukla, (2010) against CCl4 induced acute liver injury model in rats. The aqueous extractrestored the CCl4 induced alteration in serum transaminases, protein, albumin, hepatic lipid peroxidation, reduced glutathione and total protein levels to that of control group.

i) Wound-healing qualities[38]

When given topically to rats' backs with complete excision wounds, the extract hastens the healing process. An increase in DNA, total protein, and total collagen content in granulation tissues confirmed that topical administration causes enhanced cellular proliferation and collagen production at the wound site In addition, the results showed that, when compared to the control group, the incision wound's tensile strength increased significantly, its granulation tissue weight and hydroxyl proline content increased, and that the excision wound model's wound contraction and epithelialisation time decreased. These findings suggest that the wound may have promising healing properties.

j) Antidiarrhoeal effect[39]

In rats with diarrhea caused by castor oil and enteropooling caused by PGE2, ethanolic extract of *Butea monosperma* (Lamb.) Taub. bark and stem parts may have anti-diarrheal properties.

Oral administration of charcoal meal in combination with BM extract demonstrated a notable reduction in intestinal motility.

k) Impacts on hormone levels[40]

After 20 days of giving the experimental animals stigmasterol (2.6 mg/kg), which was extracted from the bark of *Butea monosperma* (Lamb.) Taub. methanolic extract, the serum concentrations of glucose, thyroxin, and triiodothyronine were reduced with an increase in insulin at the same time. Additionally, following therapy, there was a significant rise in the levels of glutathione, catalase, and superoxide dismutase as well as a decrease in hepatic lipid peroxidation, indicating that stigmasterol may have hypoglycemic and thyroid inhibitory effects.

DISCUSSION

PALASH (*Butea monosperma* (Lamb.) Taub.) is a very important medicinal plant. Samhitas, nighantus, and contemporary texts are rich sources of its literature. They are various medicinal properties ascribed to flowers, leaves, bark, stem and roots of this plant. It is widely used in cure of many disease like; eye disease, chronic disease, enlargement of spleen, leucorrhoea, wound healing, decrease blood sugar level and gout etc. The characteristics of bark and palash blooms differ from Palash root, leaves, and gum. The gum, leaves, roots, and bark all contain a lot of *katu rasa*. In flowers of *Palash tikta rasa* is the predominant *rasa*. Palash has antitumour action, anti convulsant action, anti diabetic action, anti-inflammatory properties, antimycobacterial action, antimicrobial action, anti dopaminergic action, hepatoprotective effect, effect on wound healing, antidiarrhoeal action and it has significant impact on hormone levels.

Narahari is the only author who mentions that flowers of *Palash* are *ushna* in nature and also mentioned it as *Kushthghna*. *Palash* play an important role in ecological aspects also like serves as a habitat for wildlife, improves fertility of soil through nitrogen fixation. Palash play a role in economic development also like its gum is used in dyes and adhesives. Its wood is used in low load construction and making agricultural tools.

CONCLUSION

Palash also known as *Butea monosperma* (Lamb.) Taub. or Dhak tree stands as a symbol of beauty, resilience and tradition in the Indian subcontinent. It calms the *vata* and *kapha doshas*, it aggravates the *pitta doshas*. *Palash* is beneficial for a number of ailments, such as *Trishna* (thrist), *Atisara* (diarrhea), *Pradara* (leucorrhea), *Jwara* (fever), *Charmarog* (skin diseases), *Astibanga* (fracture), *Vatarakta* (gout), *Kushta* (leprosy), *Apasmara* (epilepsy), and *Prameha* (diabetes). In order to advance the information currently available in the development of appropriate clinical therapies from the *Butea monosperma* (Lamb.) Taub. plant, this review offers a viewpoint on many phytochemistry and pharmacological elements that require attention.

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