EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 11
Issue: 7
40-44
Year: 2024

PHARMACOGNOSTICAL AND PHYTOCHEMICAL STUDIES ON LEAVES OF BUTEA MONOSPERMA (L) TOUB

MD Ataullah*, Sunil Kumar, Vinay Kumar Siroliya, Jitendra Malik, Gyan Singh and Anadi Tiwari,

Faculty of Pharmacy, P.K. University Village Thanra District Shivpuri (M.P), Pin-473665.

***Corresponding Author: MD Ataullah**
Faculty of Pharmacy, P.K. University Village Thanra District Shivpuri (M.P), Pin-473665.

Article Received on 06/05/2024 **Article Revised on 26/05/2024** **Article Accepted on 16/06/2024**

ABSTRACT
The Butea monosperma (Lam.) tree is a need. Its young fruits and blossoms are used by tribes. For a variety of illnesses, the herb is employed in Siddha, Unani, and Ayurvedic treatment. Nearly every part of the plant, including the root, leaves, fruit, stem bark, blossoms, gum, and young branches, is utilized for food, medicinal, fiber, and other applications including dye, fish poison, fish feed, cutlery, etc. The plant is said to have about 45 medical properties, of which about half have been the subject of scientific investigation and reporting. These findings are significant for more research along contemporary scientific lines. The medium-sized deciduous tree Butea monosperma is a well-known medicinal plant that is widely distributed in India, Bangladesh, Cambodia, Myanmar, China South-Central, Nepal, Laos, Sri Lanka, China Southeast, Pakistan, and Vietnam. Since prehistoric times, butea monosperma has been utilized in traditional medicine preparation. It's recognized as the flame of the forest and frequently referred to as Dhak or Palash. The Upanishads, Susruta Samhita, Vedas, Ashtanga Sangraha, Astanga Hridaya, and Charka Samhita all have descriptions of it. It is a member of the Fabaceae family, which includes phytoconstituents including flavonoids and glycosides, among other robust principles. The pharmacological activities, which are mostly demonstrated by seeds, flowers, fruits, barks, leaves, etc., are the major subject of this revisional analysis. These actions include anti-diabetic, anthelmintic, hepatoprotective, anti-stress, anti-implantation, anti-convulsant, wound healing, and more.

KEYWORDS: Butea monosperma, scientific reports, traditional applications, review.

INTRODUCTION

Butea monosperma (Lam.) is ordinarily known as Fire of woodland, has a place with the family Fabaceae.[1] It is locally called as palas, palash, mutthuga, bijasneha, dhak, khakara, chichra, Charlatan Teak, Bengal Kino, Nourouc and is normal all through India, Burma and Ceylon besides in extremely harsh parts. By and large it develops gregariously on open prairies and dispersed in blended timberland. Manors can be raised both on flooded and dry grounds. The cases ought to be gathered and root suckers are seeds that are sown prior to the first rains. produced without restriction and aid in vegetative propagation. In India, palas positions close to kusum (schleichera trijuga) as a host tree for lac bug.[2,3] Practically every one of the pieces of the plant are being utilized since a long time in medication and for other purposes. Nowadays natural meds are more famous than present day medication due to their adequacy, simple accessibility, minimal expense and for being similarly absent any trace of incidental effects. Nature is always a shining beacon to embody the exceptional peculiarity of beneficial interaction and it has provided a supply of treatments for all diseases. only the fact that there is a requirement to assess them deductively.

Butea monosperma (Lam.) kuntze is one among four animal categories having a place with the family Butea Koenig, three types of which happen in India.[4] It holds a significant spot in light of its medicinal and various other uses with economic value. Bark filaments are gotten from stem for making cordage.[2] Stem bark powder is utilized to stun fishes. Younger roots utilized for making ropes.[4] Green leaves are great grain for homegrown creatures. Leaves are utilized for making platters, cups, bowls and beedi coverings.[4,5] Leaves are likewise utilized for making Ghongda to safeguard from downpours and are eaten by bison and elephants. Tribals use blossoms and youthful organic products as vegetables. Blossoms are bubbled in water to get a color.[1] Orange or red color is utilized for shading pieces of clothing and for making skin disinfectant salves.[6] New twigs are tied on Dry twigs, bullock horns, and occasionally "pola" horns are utilized. to take care of the hallowed fire.[1] Additionally, the plant's wood is primarily utilized for water scoops and well curbs. Also,

it is as a modest board wood and for underlying work, wood mash is appropriate for newsprint producing.[5]

BOTANICAL DESCRIPTION

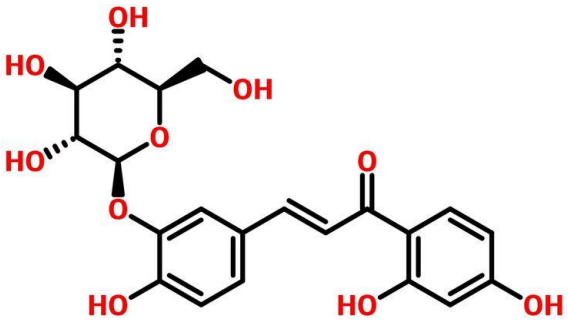
An erect tree 12-15 m high with screwy trunk and sporadic branches, bark harsh, debris shaded, youthful parts wool. Petioles are 10-15 cm long, and the stipules are linear-lanceolate with three leaves. Flyers coriaceous (the terminal 10-20 cm long, comprehensively praise from a cuneate base, the parallel more modest, 10-15 by 7.5 - 10 cm, sideways adjusted at the base, symmetrical, the smaller on the lower side), all obtuse, and glabrous above old, finely velvety and obviously reticulately veined underneath; petioles 6 mm long, heavy stipels subulate, deciduous. Blossoms enormous, in an unbending racemes 15 cm long, 3 blossoms together structure the tumid hubs of the dull olive-green velvety rhachis, with pedicels that are roughly twice as long as the calyx, thickly brown-smooth: bracts and bracteoles little, deciduous. Calyx 13 mm long, dim olive-green, thickly velvety on the outside and covered inside with silky hairs: short teeth, the 2 upper connate, the 3 lower equivalent, deltoid. Corolla 3.8-5 cm long, dressed outside with smooth, gleaming hairs, orange or salmon hued: standard 2.5 cm wide: fall crescent, veined, beaked Cases followed 12.5-20 by 2.5-5 cm, thickened at the stitches, reticulately veined argenteo-canescent: followed 2 cm long.[2,4]

Butea Monosperma Plant (A) – Flowers, (B) – Leaves

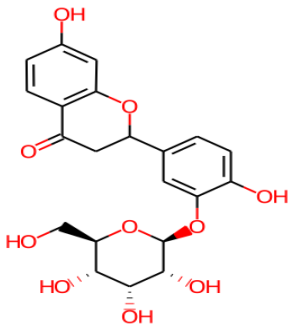
Phytochemistry

Flower: Isobutrin, Triterpene[7], butin, butein, isocoreopsin (butin 7-glucoside), coreopsin, sulphurein, monospermoside (butein 3-β-D-glucoside) and chalcones, isomonospermoside, aurones, flavonoids (palasitrin, prunetin) and steroids.[8,9] Gum: Tannins, adhesive material, pyrocatechin.[4] Seed: Oil (yellow, dull), proteolytic and lypolytic chemicals, plant proteinase and polypeptidase. (Like yeast tripsin).[4]

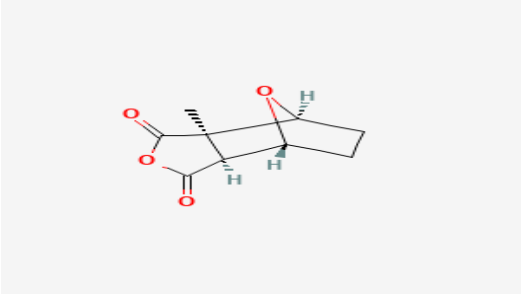
A nitrogenous acidic compound, alongside palasonin is present in seeds.[9] Additionally, it has monospermoside (butein). 3-β-D-glucoside) and somonospermoside. From seed coat allophanic corrosive has been disengaged and recognized.[10,11] Jalaric esters I, II, and laccijalaric esters III, IV make up the resin, as do amyrin, sitosterol and its glucoside, sucrose, and lactone and nheneicosanoic acid. Sap: Chalcones, butein, butin, dull isomeric flavanone and butrin, one of its glucosides. Leaves: Glucoside, Kino-oil containing oleic and linoleic corrosive, acid palmitic and lignoceric Bark: Kino-tannic corrosive, Gallic corrosive, pyrocatechin.[13] The Palasitrin and major glycosides like butrin are also present in the plant. alanind, allophanic corrosive, butolic corrosive, cyanidin, histidine, lupenone, lupeol, (-)- medicarpin, miroestrol, palasimide and shellolic corrosive.[13,14,15,16,17,18,19,20] Stem: 3-α-hydroxyeuph-25-ene and 2, 14-dihydroxy-11, 12- cyclohexane dimethyl-8-oxo-octadec-11-enyl Stigmasterol-β-D-glucopyranoside and nonacosanoic corrosive.[22]



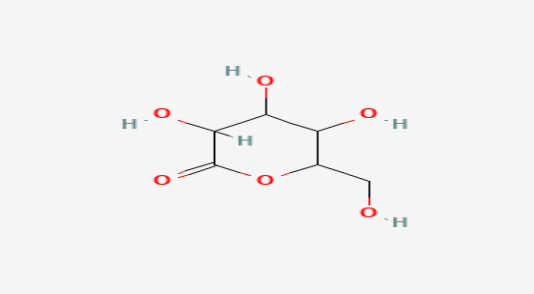
Monospermoside



Iso- monospermoside



Palasonin



Lactone-n-heneicosanoic acid-δ-lactone

REPORTS

Flowers: Blossoms are astringent to inside, increment "Vata" cure "Kapha" of leprosy, strangury, gout, skin diseases, thirst, and other ailments consuming sensation; bloom juice is helpful in eye illnesses. Bloom is harsh, love potion, expectorant, tonic, emmenagogue, diuretic, great in biliousness, irritation furthermore, gonorrhea. The color is valuable in augmentation of spleen. Flowers are used as a poultice and as a depurative. scatter enlarging and to advance feminine stream. They are given to women who are pregnant to treat diarrhea. It is likewise helpful to keep discharge from urinogenital parcels of guys. The flowers squashed in milk and sugar is added, 3-4 spoons whenever smashed per day for a month assists with lessening body heat and ongoing fever. Blossoms are absorbed water for the time being and some this mixture is intoxicated each day against leucorrhoea till fix.[1,2]

Mishra et al., assessed free revolutionary searching action of different concentrates of blossoms by utilizing different in-vitro models like diminishing power measure, searching of 2, 2 diphenyl-1- picrylhydrazyl (DPPH) spiral, nitric oxide revolutionary, super oxide anion extremist, hydroxyl revolutionary and restraint of erythrocytes hemolysis utilizing 2, 2' azo-bis (amidinopropane) dihydrochloride (AAPH). Methanolic separate alongside its ethyl acetic acid derivation and butanol divisions showed intense free extremist searching activity. It's possible that higher levels of phenolic contents in the concentrates.[8] Flowers have antistress properties, according to Kasture et al. Water dissolvable piece of ethanolic extricate weakened water submersion stress, instigated height of mind serotonin and plasma levels of corticosterone. The ulcer record likewise diminished in portion subordinate way. Noticed impacts might be credited to its vague antistress movement.[23]

Kasture et al. detailed anticonvulsive action of blossoms. The anticonvulsive standard was viewed as a triterpene present in the ratio of n-hexane to ethyl acetate (1:1) in the oil ether extricate. Triterpene showed anticonvulsant action against seizures initiated by Greatest Electro Shock (MES), it additionally restrained seizures incited by pentylene tetrazole, electrical tinder, and lithium in combination sulfate and pilocarpine nitrate. Further investigations are required to examine its handiness in the treatment of epilepsy.[7]

The phytochemical studies and were reported by Shah K.G. et al. antiestrogenic action of blossoms. Phytochemical examinations of the dried blossoms of Butea frondosa Roxb uncovered the presence of atleast seven flavones and flavonoid constituents, such as butrin, isobutrin, and four free amino acids. Cleansed alcoholic concentrate at lower portion level what's more, ethereal and water separates at higher portion level have been found to display critical antiestrogenic action in youthful mice, while ethyl acetic acid derivation extricate containing butrin furthermore, isobutrin displayed unfortunate action. substantial restriction of uterus weight gain, vaginal epithelium cornification and trademark histological changes have been noticed.[27]

Gupta S.R. et al. done a reinvestigation of the blossoms of Butea monosperma and uncovered the presence of seven glucosides of flavonoids. Butrin and isobutrin are two of them, which have been separated before from the plant. Three Coreopsin, isocoreopsin, and are examples of glucosides that have been found. sulphurein. The excess two are new and have been appointed the designs (monospermoside) and (isomonospermide).[11]

RESULT AND DISCUSSION

We have gathered information on botanical, phytochemical, nutritional, traditional claims, and modern investigations in the current review. The tree has a lot of promise. It seems to be active over a wide range of conditions. Research has been done on the plant's antioxidant, antidiarrheal, antistress, anticonvulsive, antihepatotoxic, nootropic, antiestrogenic, and anthelmintic properties in relation to cutaneous wound healing and diabetes. Furthermore, root has antibacterial and lens-protective properties. We are now identifying and isolating the various chemical ingredients. The plant's efficacy against roundworm and threadworm infestations was demonstrated in a clinical experiment; however, the drug's ineffectiveness against tapeworm infestations was the sole finding. The therapy involves the use of an Ayurvedic formulation using Butea monosperma as one of its ingredients.

REFERENCES

1. M.V. Patil, S. Pawar and D.A. Patil. Ethnobotany of Butea monosperma (Lam.) Kuntze in North Maharashtra, India. Nat. Prod. Rad., 2006; 5(4): 323-25.

2. K. R. Kirtikar, B.D. Basu, Indian medicinal plants, (Lalit mohan Basu, Allahabad, India, 1935), 2nd edition, 1935; 1: 785-88.
3. L.D. Kapoor. Handbook of Ayurvedic Medicinal Plants, Herbal Reference Library Edition (Replica Press Pvt. Ltd., India, 200s5), 86.
4. The Wealth of India, A dictionary of India raw material and Industrial products, (Publication and Information Directorate, CSIR, New Delhi), 1988; 2: 1-344.
5. B.P. Ambasta. The Useful Plants of India, (Publications and Information Directorate, CSIR, New Delhi), 1994; 1-91.
6. V.S. Agarwal, Drug Plants of India, (Kalyani Publishers New Delhi), 1: 52.
7. V.S. Kasture, S.B. Kasture and C.T. Chopde. Anticonvulsive activity of Butea monosperma flowers in laboratory animals. Pharmacol. Biochem. Behav., 2002; 72: 965-72.
8. M.S. Lavhale and S.H. Mishra. Evaluation of free radical scavenging activity of Butea monosperma Lam. Indian. J. Exp. Biol., 2007; 45: 376-84.
9. S.R. Gupta, B. Ravindranath and T. Seshadri. The glucosides of Butea monosperma. Phytochemistry, 1970; 9(10): 2231-35.
10. Jawaharlal, S. Chandra and M. Sabir. Modified method for isolation of palasonin – the Anthelmintic principle of Butea frondosa seeds. Indian. J. Pharma. Sciences, 1978; 40: 97-98.
11. R. P. Rastogi, B.N. Mehrotra. Compendium of Indian Medicinal Plants, (CDRI, Lucknow and Publication and information Directorate, New Delhi), 1979; 2: 115.
12. A.N. Singh, A.B. Upadhye, V.V. Mhaskar and S. Dev. Components of soft resin. Tetrahedron, 1974; 30(7): 867-74.
13. K.M. Nadkarni's, Indian Materia Medica (Bombay Popular Prakashan), 2002; 1: 223-25.
14. N.H. Indurwade, P.S. Kawtikwar, S.B. Kosalge and N.V. Janbandhu. Herbal plants with aphrodisiac activity. Indian Drugs, 2005; 42(2): 67-72.
15. K. C. Shah, A.J. Baxi and K.K. Dave. Isolation and identification of free sugars and free amino acids from Butea frondosa Roxb flowers. Indian Drugs, 1992; 29(9): 422-23.
16. R. Madhav, T.R. Seshadri and G.B.V. Subramanian. Structural investigations of lac resin: I. Chemical studies on hard resin. Indian. J. Chem. Sec. B, 1967; 5: 132.
17. M. Porwal, S. Sharma and B.K. Mehta. Isolation and identification of a new derivative of allophanic acid from the seed coat of Butea monosperma (Lam.) Kuntze. Indian. J. Chem. Sec. B, 1988; 27(3): 281-82.
18. G.M. Robinson. Leucoanthocyanins III. Formation of cyanidin chloride form a constituent of the gum of Butea frondosa. J. Chem. Soc.1157, 1937.
19. B.M.R. Bandara, N.S. Kumar and K.M.S. Wimalasiri. Constituents of the stem bark Butea monosperma (leguminosae). J. Nat. Sci. Counc. Sri. Lanka., 1990; 18(2): 97-103.
20. W. Schoeller, M. Dohrn. W. Hohlweg. Estrogenic products. Patent: US 2, 112, 712, 1938; 2.
21. P.K. Guha, R. Pot and A. Bhattacharyya. An imide from the pod of Butea monosperma. Phytochemistry, 1990; 29(6): 2017.
22. Y.N. Shukla, M. Mishra and S. Kumar. Euphane triterpenoid and lipid constituents from Butea monosperma. Phytochemistry, 2000; 54(8): 835-38.
23. A.D. Bhatwadekar, S.D. Chintawar, N.A. Logade, R.S. Somani, V.S. Kasture and S.B. Kasture. Antistress activity of Butea monosperma flowers. Ind. J. Pharmacol., 1999; 31: 153-55.
24. H. Wagner, B. Geyer, M. Fiebig, Y. Kiso and H. Hikino. Isobutrin and Butrin, the antihepatotoxic principles of Butea monosperma flowers. Planta Med., 1986; 52(2): 77- 79.
25. N.S. Gawale, S.C. Pal, V.S. Kasture and S.B. Kasture. Effect of Butea monosperma on memory and behaviour mediated via monoamineneurotransmitters in laboratory animals. J. Nat. Remedies, 2001; 1(1): 33-41.
26. M. Mishra, Y.N. Shukla and S. Kumar. Chemical constituents of Butea monosperma flowers. J. Med. Aro. Plant Sci., 2000; 22(1): 16.
27. K.G. Shah, A.J. Bakxi, V.J. Sukla, K.K. Dave, S. De and B. Ravishankar. Phytochemical studies and antiestrogenic activity of Butea frondosa (Butea monosperma) flowers. Ind. J. Pharm. Sci., 1990; 52: 272-75.
28. K.C. Shah, A.J. Baxi and K.K. Dave. Isolation and identification of free sugars and free amino acids from Butea frondosa Roxb flowers. Indian drugs., 1992; 29(9): 422-23.
29. D. Prashant, M.K. Asha, A. Amit and R. Padmaja. Short report: Anthelmintic activity of Butea monosperma. Fitoterapia, 2001; 72(4): 421-22.
30. H.P. Pandey. Seed oil of Butea monosperma: A traditional sexual toner and contraceptive. Ethnobotany, 2001; 13(1-2): 118-120.
31. A.N. Singh, A.B. Upadhye, V.V. Mhaskar and S. Dev. Components of soft resin. Tetrahedron, 1974; 30(7): 867-74.
32. S.K. Bhargava. Estrogenic and postcoital anticonceptive activity in rats of butin isolated from Butea monosperma. J. Ethnopharmacology, 1986; 18(1): 95-101.
33. M. Mishra, Y.N. Shukla and S. Kumar. Euphane triterpenoids and lipid constituents form Butea monosperma. Phytochemistry, 2000; 54(8): 835-38.
34. S.H. Bodakhe and M. Ahuja. In-vitro lens protective and antimicrobial activity of Butea frondosa. J. Pharm. Pharmacol., 2004; S(63): 171.
35. N. Savitri Kumar and K.M. Swarna Samaranayake. An antifungal constituents from the stem bark of Butea monosperma. J. Ethnopharmacology, 1989; 25(1): 73-75.
36. S.K. Sharma, A. Gunakkunru, K. Padmanaban, P. Thirumal, J. Pritila and N. Venkatesan. Anti-

dirrhoeal activity of Butea monosperma in experimental animals. J. Ethnopharmacology, 2005; 98(3): 241-44.
37. L. Suguna, S. Miriyala and M. Panchatcharam. Efficacy of Butea monosperma on dermal wound healing in rats. Int. J. Biochem. cell. Biol., 2005; 37(3): 566-73.
38. J.P. Jain and S.M.A. Nauvi. A clinical trial of Palash (Butea monosperma (Lam.)Kuntze. Syn. B. Frondosa Koen. ex Roxb.) in worm infestations (Krimi Roga). J. Res. Ay. Sid., 1986; 7(1-2): 13-22.
39. A.K. Agarwal, M. Singh, ,N. Gupta, R. Saxena, A. Puri, A.K. Verma, R.P. Saxena, C.B. Dubey and K.C. Saxena. Management of giadiasis by an immunomodulatory herbal drug Pippali rasayana. J. Ethnopharmacology, 1994; 44(3): 143-46.
40. ILDIS Worlds Database of Legumes resource page. ILDIS Web site. Available at: http://www.ildis.org/LegumeWeb?version~10.01and LegumeWeb&tno~15818. Access date – April 4, 2007.