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A Review:-*Butea monosperma Linn*

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Abstract:-*Butea- monosperma* (Fabaceae), commonly known as Palas in Hindi is a medium-sized deciduous tree common throughout India, Burma and Ceylon. It finds use both medicinally and commercially with each part of the plant having utility. The plant is traditionally reported to possess astringent, bitter, alterative, aphrodisiac, anthelmintic, antibacterial and anti-asthmatic properties. Bark yields red juice known as 'Butea gum' or 'Bengal Kino'.

Key Words:- Butea- monosperma, Palas, Butea gum, Bengal Kino.

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Introduction:-It is powerful astringent and is given in many forms of chronic diarrhea. Seeds have anthelmintic property especially for roundworms and tapeworms. Flowers yields a brilliant yellow coloring matter due to presence of chalcones. Palas wood is white or yellowish brown used mainly for well-curbs water-scoops and for fuel. The plant is highly used by the rural and tribal people in curing various disorders. *B. monosperma* has effective natural origin that has a tremendous future for research.

Scientific Classification

Kingdom- Plantae – Plants

Sub-kingdom- Tracheobionta – Vascular plants

Super-division- Spermatophyta – Seed plants

Division- Magnoliophyta – Flowering plants

Class- Magnoliopsida – Dicotyledons

Subclass- Rosidae

Order- Fabales

Family- Fabaceae – (papilionaceous)

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Genus- *Butea* Roxb.ex Wild. – Butea

Species- *Monosperma* .

Chemical Constituents of Butea Monosperma

Flower: Triterpene, butein, butin, isobutrin, coreopsin, isocoreopsin (butin 7-glucoside), sulphurein, monospermoside (butein 3-e-D-glucoside) and isomonospermoside, chalkiness', aureoles, flavonoids (palasitrin, prunetin) and steroids.

Gum: Tannins, mucilaginous material, pyrocatechin.

Seed: Oil (yellow, tasteless), proteolytic and lypolytic enzymes, plant proteinase and polypeptidase. (Similar to yeast tripsin). A nitrogenous acidic compound, along with palasonin is present in seeds. It also contains monospermoside (butein 3-e-D-glucoside) and so monospermoside.

Resin: Jalaric esters I, II and laccijalaric esters III, IV, From seed coat allophanic acid has been isolated and identified. Z- amyrin, e-sitosterone its glucoside and sucrose; lactone-nheneicosanoic acid-delta-lactone.

Sap: Chalcones, butein, butin, colourless isomeric flavanone and its glucosides, butrin

Bark: Kino-tannic acid, Gallic acid, pyrocatechin. The plant also contains palasitrin, and major glycosides as Butrin, alanind, allophanic acid, butolic acid, cyanidin, histidine, lupenone, lupeol, (-)-medicarpin, miroestrol, palasimide and shellolic acid.

Stem: 3-Z-hydroxyeuph-25-ene and 2, 14-dihydroxy-11, 12-dimethyl-8-oxo-octadec-11-enylcyclohexane. Stigmasterol-D-glucopyranoside and nonacosanoic acid.

Leaves: Glucoside, Kino-oil containing oleic and linoleic acid, palmitic and lignoceric acid.

Traditional Uses

Flower- *B. monosperma* is traditionally used as antioxidant, memory and behaviour stimulant, antileprotic, anticonvulsant, anti-inflammatory, antigout, antiulcer, antistress, astringent diuretic, antihepatotoxic, menstrual disturbances, enlarged spleen, burning sensation and eye diseases.

Leaf- *B. monosperma* is traditionally used as antitumor, anti-inflammatory, antidiabetic, antimicrobial, diuretic, anthelmintic, appetizer, astringent carminative, aphrodisiac, stomach disorders, diabetic sore throat, irregular bleeding during menstruation, flatulent colic, cough and cold.

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Stem- bark is traditionally used as aphrodisiac, antidysenteric, antiulcer, antitumor, antimicrobial, antifungal, antipyretic, blood purifier and anti-asthmatic. It is also used in bleeding hemorrhoid disorder,

Dysmenorrheal, liver disorders, gonorrhea, wound, worm infections, cough and cold.

Root- is used in night blindness, elephantiasis, and impotency and in snake bite. It also causes temporary sterility in women and is applied in sprue, piles, ulcers, tumors and dropsy.

Seed- of *B. monosperma* is used in inflammation, bleeding piles, urinary stones, skin and eye diseases, abdominal troubles, intestinal worms and tumour. When seeds are pounded with lemon juice and applied to the skin, they act as a rubefacient. Gum is used in stomatitis, corneal apacititis, ring worm, leucorrhoea, septic sore throat, excessive perspiration and diarrhea.

Pharmacological activity

1. Anthelmintic activity

Seeds of Butea -monosperma administered as crude powder (CP) at doses of 1, 2 and 3 g/kg to sheep naturally infected with mixed species of gastrointestinal nematodes exhibited a dose and a time-dependent anthelmintic effect. The maximum reduction of 78.4% in eggs per gram of feces (EPG) was recorded on day 10 after treatment with 3 g/kg. Levamisole (7.5 mg/kg), a standard anthelmintic agent, exhibited 99.1% reduction in EPG.

2. Anti-diarrhea activity

The anti-diarrhea potential of the ethanol extract of stem bark of *Butea- monosperma* Kuntz has been evaluated using several experimental models in Wistar albino rats. The extract inhibited castor oil induced diarrhea and PGE2 induced enter pooling in rats; it also reduced gastrointestinal motility after charcoal meal administration. The results obtained establish the efficacy and substantiate the use of this herbal remedy as a non-specific treatment for diarrhea in folk medicine.

3. Hepatoprotective potential

Aqueous extract of flowers of Butea- monosperma (Fabaceae) was evaluated at different dose levels (200, 400, 800mg/kg, p.o.) for its protective efficacy against CCl4 (1.5 ml/kg

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i.p.) induced acute liver injury to validate its use in traditional medicines. The CCl4 administration altered various biochemical parameters, including serum transaminases, protein, albumin, hepatic lipid peroxidation, reduced glutathione and total protein levels, which were restored towards control by therapy of B. monosperma Adenosine triphosphatase and glucose-6-phosphatase activity in the liver were decreased significantly in CCl4 treated animals. Therapy of B. monosperma showed its protective effect on biochemical and histopathological alterations at all the three doses in dose dependent manner. B. monosperma extract possess Modulatory effect on drug metabolizing enzymes as it significantly decreased the hexobarbitone induced sleep time and increased excretory capacity of liver which was measured by BS Pretention. Histological studies also supported the biochemical finding and maximum improvement in the histoarchitecture was seen at higher dose of BM extract.

4. Anti- hyperglycemic and anti-hyperlipaemic Effects

The anti-hyperglycemic activity of the ethanol extract of Butea monosperma (BMEE) was studied in glucose-loaded and alloxan-induced diabetic rats. Single dose treatment of BMEE (200 mg/kg, p.o.) significantly improved glucose tolerance and caused reduction in blood glucose level in alloxaninduced diabetic rats. Repeated oral treatment with BMEE (200 mg/kg/day) for 2 weeks significantly reduced blood glucose, serum cholesterol and improved HDL-cholesterol and albumin as compared to diabetic control group.

5. Anti-inflammatory activity

Methanolic extract of Butea monosperma flowers (MEBM) was studied for anti-inflammatory activity against carrageenin induced paw edema and cotton pellet granuloma in albino rats. In carrageenin induced paw edema, MEBM at oral doses of 600 mg/kg and 800 mg/kg, dose dependently inhibited the paw edema. In cotton pellet induced granuloma, MEBM at the same doses was found to significantly inhibit granuloma tissue formation, including significant reduction in levels of serum lyso-somal enzymes (SGOT, SGPT and ALP) and lipid peroxides as compared to control.

6. Wound Healing

Topical administration of an alcoholic bark extract of Butea *monosperma* on cutaneous wound healing in rats increased cellular proliferation and collagen synthesis at the wound

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site, by increase in DNA, total protein and total collagen content of granulation tissues, the tensile strength also increased significantly & Histopathological examinations also provide favorable result So, it possesses antioxidant properties, by its ability to reduce lipid peroxidation.

7. Antistress Activity

Water soluble part of ethanolic extract of flower attenuated water immersion stress, induced elevation of brain serotonin and plasma corticosterone levels. The ulcer index also decreased in dose dependent manner. Observed effects may be attributed to its nonspecific antistress activity.

8. Antimicrobial, Antifungal Activity

Antifungal compound isolated from petroleum and ethyl acetate extract of stem bark from *Butea monosperma* which were identified as (-)-3-hydroxy-9- methoxypterocarpan (-)-medicarpin. Both (-)-medicarpin and its acetate were active against cladosporium cladosporioides. The active constituent of low polarity was isolated by bioassay monitored chromatographic fractionation, and identified as (-)-medicarpin by comparison of physical data. The antifungal activity of (-)-medicarpin was found to be greater than that of Benlate, a standard fungicide, while (-)-medicarpin acetate also exhibited significant activity against C. cladosporiodes. The seed oil of Butea monosperma shows significant bactericidal and fungicidal effect in in-vitro testing studied by the filter paper disk method against several human pathogenic bacteria and fungi. Gum of Butea monosperma is used to treat microbial and fungal

9.Antidiabetic and antihyperlipidmic activity

Single dose treatment Ethanolic extract of Butea monosperma of (200 mg/kg, p.o.) significantly improved glucose tolerance and caused reduction in blood glucose level in Alloxan-induced diabetic rats. Repeated oral treatment for 2 weeks significantly reduced blood glucose, serum cholesterol and improved HDL-cholesterol and albumin as compared to diabetic control group. Ethanolic extract of leaves also have antidiabetic and antioxidant potential in Alloxan-induced diabetic mice. Ethanolic extract of seeds (300mg/kg b.w.) exhibited significant antidiabetic, hypolipidemic and antiperoxidative effects in non-insulin dependent diabetes mellitus rats. Aqueous extract significantly

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decreases blood glucose level both in normal ($p<0.01$) and Alloxan induced diabetic ($p<0.001$) mice at 2 and 5 hr respectively.

10. Anticonvulsive activity : Presence of triterpene shows anticonvulsive activity . The ethanolic extracts of leaves of Albizzia lebbeck and flowers of Hibiscus rosa sinesis and the petroleum ether extract of flowers of Butea monosperma exhibited anticonvulsant activity.

Conclusion

From the time immemorial, plants have been used as curative agent for variety of ailments. Herbs are the natural drugs used to regain the alterations made in normal physiological system by foreign organisms or by any malfunctioning of the body. In every ethnic group there exists a traditional health care system, which is culturally patterned. In rural communities, health care seems to be the first and foremost line of defense. It is very essential to have a proper documentation of medicinal plants and to know their potential for the improvement of health and hygiene through an eco friendly system.Tthe plant *B. monosprema* is used in treating various ailments. Wherein a detailed research work in the haracterization and standardization is utmost required for this potential plant for developing its various formulations, which can ultimately be beneficial for human beings as well as animals. However, various study will explore much depth about this plant used in the name “Flame of the forest”.

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