



THE FLAMBOYANT DELONIX REGIA (GULMOHAR)

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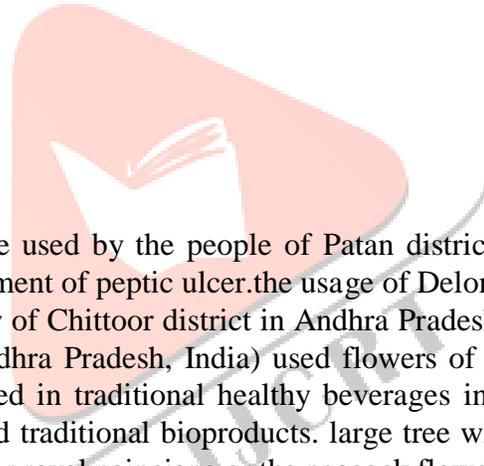
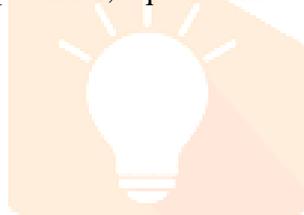
Abstract : Gulmohar is well known for its nutritional & medicinal properties in all over world. The research was undertaken to test the effect of gulmohar seeds extract on in flame as on by in-vitro method using initiation of rasbumin denaturation technique. Ethanolic (80%) extract of seed of Delonix regia (gulmohar) were taken for test & it was found that it shares anti-inflammatory activity all that of standard drug diclofenac. This activity must be 50% as a compared to standard drug diclofenac.

Traditionally Delonix regia has been used in various ailments such as chronic fever, antimicrobial, constipation, inflammation, arthritis, hemoplaga, piles, boils, pyorrhea, scorpion bite, bronchitis, asthma and dysmenorrhoea. However, there is little experimental evidence for its traditional use. In this review an attempt has been made to gather and compile the scattered traditional information along with the experimental evidence on the beneficial properties of Delonix regia. It possess copious phytochemicals, saponins, alkaloids, carotene, hydrocarbons, phytotoxins, flavonoids, tannins, steroids, carotenoids, galactomannon, lupeol, β -sitosterol, terpenoids, glycosides and carbohydrates, in leaves, flowers, bark and root. this plant for the prevention of various other diseases and to further unravel, characterize, patent and commercialize the protective components from different parts of this plant for the commercialize the protective components from different parts of this plant for the benefit of humans.

Keywords: Delonix regia, Antioxidants, Diclofenac, anti inflammatory, anti Bacterial, Anti-malarial, Anti Fungal, Anti – Oxidant, Pharmaceutical Potential.

INTRODUCTION :

Gulmohar is a deciduous, The generic name, 'Delonix', is derived from Greek words-delos (visible), and onyx (claw), due to the conspicuously clawed petals. The specific name, 'regia', is from the Latin word 'regis' (royal, regal, magnificent). It is called as chura, radha (in Bengali), royal, flamboyant, poinciana (in French), gul mohr, shima, sunkesula (in Hindi), mayirkonrai, panjadi (in Tamil), flamboyant flame tree, gold mohur, flame tree, peacock flower, gul mohr and royal poinciana (in English). The plant *Delonix regia* belongs to family Fabaceae, sub-family Caesalpinioideae. It is a tree (10-15 m high, girth of upto 2 m) with many branches and umbrella shaped crown. It has biparinnate, alternate, light green, feathery leaves, each having 12-40 pairs of small leaflets ,slightly fragrant orange-red flowers, which literally cover the tree from May to June. Petals (5-6.5 cm, 2-3 cm wide) are broadly spoon shaped. The tree is native to Madagascar and has been widely used by the tribal belts in Birbhum district, West Bengal, India. The different parts of *Delonix regia* were used by the tribes of Chhatarpur district, Madhya Pradesh, India for the treatment of diseases. The seeds were used in pyorrhea; the roasted and crushed leaves were wrapped in a cloth and inhaled just after scorpion bite; infusion of flowers was used in bronchitis, asthma and malarial fever. The leaves were also used in rheumatism and as purgatives. The plant has antirheumatic and sparmogenic potential. The bark showed antiperiodic, febrifuge potential; aqueous and ethanol extract of flowers were used against round worms.



Delonix regia has been reported to be used by the people of Patan district, North Gujarat (India) in traditional medicine. in the treatment of peptic ulcer. the usage of *Delonix regia* in traditional medicines was confirmed in a survey of Chittoor district in Andhra Pradesh, India. The people of Yanadi (a tribal community in Andhra Pradesh, India) used flowers of *Delonix regia*. The water extracts of flowers were also used in traditional healthy beverages in several African countries. It is a part of local medicine and traditional bioproducts. large tree with fern-like leaves. Gulmohar is also known as flame tree or royal painciana or the peacock flower tree. It is mostly planted for their shade – giving properties. And as an ornamental tree. Phyto chemical screening fielded sterols, phenolic compounds, triterpenoids and flavonoids. The major medicinal properties of *delonix regia* include antimicrobial, anti-diarrhea, hepatoprotective , anti-inflammatory, inflammatory antidiabetic, anti-bacterial and carminative the present study was focused to evaluate the anti-inflammatory action of ethanolic extracts of seeds of *delonix regia*.

HISTORY :

The mighty Gulmohar trees are the same work of art of nature. This beauty was discovered in the 19th century madagascar by botanist Wesnel Bojer. Gulmohar has come from dry deciduous region of Madagascar. Gulmohar achieves it's limelight from April to June. However it grows sustainably in the tropical and Subtropical areas of the world now. the areas of the world where Gulmohar bestows its celestial belle include North America Cambbean, and central America Europe middle East. southeast Asia, East Asia, Australia, and Micronesia.

Botanical classification :

Kingdom	: plantae
Class	: spermantopsida
Family	: Fabaceae
Genus	: Delonix
Species	: regia
Botanical name	: Delonix regia

BOTANICAL DESCRIPTION :

The gulmohar tree grows to a height of between 30 and 40 feet. It is large tree with fern-like leaves. Commonly it is known by a name as Krishnachura and peacock flower tree.

• Leaves:

It has fern-like leaves. Leaves contain B sitosterol, lupeol and tannins. . An essential oil obtain from the leaves has antifungal property. Gulmohar is well know for it's beautiful flower.consider as most beautiful tree in the world. It's has oval shape leaves and bright red flowers.

Root : The wood of the Gulmohar tree is weak due to which they have buttress roots for reinforcement. Because of the thin roots, the dog breed barbets frequently make holes in the rotting branches of Gulmohar.

EXPERIMENTAL :

The plant material seeds collected from tree near Daund, Maharashtra.

OBSERVATION :

the turbidity of plant extract solution observed to be less than that of standard drug diclofenac,

but the presence of turbidity shows that the given plant extract shows in vitro anti-in flammatory activity as that of standard drug diclofenac by inhibition of albamin Denatration Techniuque.

ANTI-INFLAMMATORY ACTIVITY :

1. Carrageenan-Induced Paw Edema. The ethanol extract (400 mg/kg) significantly inhibited carrageenan-induced paw oedema. The ethanol extract produced a dose dependent inhibition of carrageenan oedema which was comparable with known anti-inflammatory drugs. The ethanol extract of *Delonix regia* produced significant ($P < 0.01$) anti-inflammatory activity. Significant reduction of paw oedema was observed at 3 h after carrageenan injection. The reduction in carrageenan-induced paw oedema by 400 mg/kg of ethanol extract after 3h was 48.1%, while oedema reduction by the standard drug, indomethacin (10 mg/kg), was 65.8% .
2. Cotton Pellet Granuloma. The ethanol extract significantly inhibited cotton pellet granuloma. The percent inhibition of ethanol extract was 42.4% at dose of 400 mg/kg, and this inhibition was less than that produced by indomethacin (61.6%) .

IMPORTANCE :

The tree is mainly valued for its seeds leaves, shade and ornamental

value. The seeds yield 18 to 27.5% fatty oil known as the “pangam” or “karanga” oil of commerce. Its main use is in tanning industry. The oil and its “Karjan” possess insecticidal and anti-bacterial properties.

The wood is employed locally for agricultural implements; handles for carpentry tools, combs etc. Principle use is as fuel, the calorific value of wood being 4600 kcal/kg.

CULTURAL & COMMERCIAL IMPORTANCE:

Gulmohar is also sacred in terms of cultural importance. Its wood is used for fuel, and the flowers are used to produce bee forage. The tree produces thick water soluble gum, which is used as a binder in the manufacture of tablets and the textile industries. Its seeds are hard and elongated, which are used to make beads. These seeds are engineered to manufacture oil known as Karanga or Pangam oil. It is utilized in the tanning industry.

PHYTOCHEMICAL AND CHEMICAL CONSTITUENT:

Phytochemical in *delonix regia* bark contains

B-sitosterol, saponins, alkaloids, carotene, hydro carbons, phyto to zins and flavonoids. Where flower contain tannins, saponins, Flavonoids seeds contain saponins and leaves have lupeol and B – sitosterol.

The wide pharmacological and antioxidant potential of *Delonix regia* might be due to the presence of immense phytochemical. Bark contains β -sitosterol, saponins, alkaloids, carotene, hydrocarbons, phytotoxins and flavonoid, whereas flowers contain tannins, saponins, flavonoids, steroids, alkaloids, carotenoids; seeds contain saponins, and leaves have lupeol and β -sitosterol . Tannins, terpenoids, alkaloids, glycosides, carbohydrates and sterols were reported to be present in the root bark of *Delonix regia* the preliminary phytochemical analysis of alcoholic extract (AE) of flowers was found to contain proteins, amino acids, cardioglycoside, alkaloids, flavonoids, tannins and phenolic compounds.

Carbohydrates and saponins were found in the water, chloroform and methanol extracts of seeds of *Delonix regia*, whereas in the chloroform and methanol extracts, flavonoids were also detected.

The chemical components and fatty acid content in the seeds and seed oils of *Delonix regia* was studied. *Delonix regia* was reported to contain 7% of crude fat, 45.2% of crude protein and 39.5% of carbohydrate content. Neutral, glycolipids and phospholipids with values of 80.2 ± 0.5 , 13.6 ± 0.1 , and 6.2 ± 0.5 respectively were found. The qualitative and quantitative distribution of carotenoids was studied in different parts of flower one were also detected. The qualitative and quantitative distribution of carotenoids was studied Petals were found to contain 29 carotenoids viz. phytoene, phytofluene, β carotene, γ -carotene, lycopene, rubixanthin, zeaxanthin, lutein etc. Sepals were found to contain 18 (phytoene, phytofluene, β -carotene, γ -carotene, lycopene, etc), whereas filaments contain 20 (phytoene, β -carotene, γ -carotene, lutein, zeaxanthin, antheraxanthin,

flavoxanthin and other epoxy carotenoids) carotenoids. Anthers were reported to contain the highest concentration of carotenoids, from which 90% was zeaxanthin .

Alkaloids, flavonoids, proteins, tannins, carbohydrates, phenols, triterpenes and steroids were found to be present in *Delonix regia* flowers. Three major anthocyanins in the water extract of *Delonix regia* flowers were characterized. LC-MS was used to confirm the molecular structure. Cyanidin 3-O-rutinoside and pelargonidin 3-O-rutinoside were identified in the concentration of 10.7 and 0.9 mg/l respectively .The GC MS analysis of the leaves extract revealed the presence of benzenetriol, butyl-8-methylnonyl ester, lupeol and vitamin E as the major compounds .

The structure of the condensed tannins isolated from leaf, fruit and stem bark of *Delonix regia* was investigated by using $[^{13}\text{C}]$ Nuclear Magnetic Resonance (^{13}C NMR), high performance liquid chromatography

TRADITIONAL USES :

It is used in many cases such as Cure diarrhea, Baldness and hair loss, Menstrual Cramp, Leucorrhoea, Piles. gout pain, scorpion poison, etc.

- Gulmohar has medicinal properties like antibacterial, antifungal, anti-inflammatory, antimalarial, antimicrobial, antioxidant, cardio-protective, gastro protective, and wound healing activity.
- Leaves have anti diabetic properties, using its methanol extract significantly lowers the blood glucose levels. • The wood is used for fuels, Its flowers are used in

producing bee forage. • Gulmohar tree produces a thick water-soluble gum which is then used as abinding agent in manufacturing tablets and also in textile industries.

The Shaiji community in Southwestern Bangladesh used the flowers of *Delonix regia* for curing chronic fever 250 g of flower were boiled in 1.5 l of water (1/2 h) and 2 ml of the boiled mixture was taken morning and evening successively for some days. During the study on the traditional medicines and herbal plants of Nigeria the flowers of *Delonix regia* possessed antibacterial activity . The medicinal plants were used to cure wounds. The leaves of *Delonix regia* were crushed and applied on wounds . The leaves of *Delonix regia* (Boj. Ex. Hook) Raf. have been

used to treat constipation, inflammation, arthritis and hemiplegia; in Koothanoallur and Marakkadai, Thiruvarur district of Tamil Nadu, India .

The leaves and fruits were used in piles and helminthiasis in the areas of Pirojpur district, Bangladesh. The investigation conducted on Sylhet district, Bangladesh revealed the use of leaves and fruits in piles and boils. Fruits eaten for piles and crushed leaves and fruits applied to boil. *Delonix regia* has been used by the tribal belts in Birbhum district, West Bengal, India *Delonix regia*, an leave and fruits were used pile and :

Delonix regia, an ethnomedicinal plant possessed antibacterial activity .The different parts of *Delonix regia* were used by the tribes of Chhatarpur district, Madhya Pradesh, India for the treatment of diseases. The seeds were used in pyorrhea; the roasted and crushed leaves were wrapped in a cloth and inhaled just after scorpion bite; infusion of flowers was used in bronchitis , asthma and malarial fever. The leaves were also used in rheumatism and as purgatives. The plant has antirheumatic and sparmogenic potential. The bark showed antiperiodic, febrifuge potential; aqueous and ethanol extract of flowers were used against round worms.

Delonix regia has been reported to be used by the people of Patan district, North Gujarat (India) in traditional medicines . It is also present in the list of traditional plants used by people of Bangangte region, Western Cameroon in the treatment of peptic ulcer the usage of *Delonix regia* in traditional.

The floral extracts of *Delonix regia* were used by the local people of Chittoor district, Andhra Pradesh, India for treating fungal infection. The zone of inhibition for ethanol extract was found to have diameter of 13 mm against *Candida albicans* in agar well diffusion assay. Tetracycline and DMSO were used as positive and negative controls, respectively. The antimicrobial evaluation by other workers is shown .The plant also possessed gastroprotective , antiemetics, larvicida , hepatoprotective, anti-diarrhoeal , anthelmintic , antiulcer , biotermicidal , glucose tolerance , anti-inflammatory, and anticancer potential .

ADVANTAGES:

Gulmohar has medicinal properties like antibacterial, antifungal, anti-inflammatory, antimalarial, antimicrobial, antioxidant, cardio-protective, gastro protective, and wound healing activity.

. Leaves have anti diabetic properties, using its methanol extract significantly lowers the blood glucose levels.

. It is good for environment.

It is used to control soil erosion.

DISADVANTAGE :

The wood is also vulnerable to insects and animals, making its maintenance a bit tough. It is a tree of the heat.

Extreme winter is not suitable for planting of Gulmohar

The crown spread is hard to control.

CONCLUSION :

The given sample of test solution is Ethconolic exteact of seed of delonix regia of albumin Denaturation technique.

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