

# Study of Morphoanatomical Phytochemical and Ethnobotany of *Thespesia populnea*

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**Abstract:** *Thespesia Populnea*, sometimes known as the Indian tulip tree, is a famous evergreen tree in the Malvaceae family. In India, the plant is found in coastal forests and tropical areas. All of its components are employed in the well-known Indian medical system. Astringent, antibacterial, hepatoprotective, hemostatic, anti-diarrheal, and anti-inflammatory properties have all been associated with the plant. Important metrics mentioned include macroscopical characteristics, microscopic or anatomical research, physical assessment, and phytochemicals. It suggested potential details for accurately identifying and standardising the plant material.

## Introduction

*Thespesia populnea* Solana ex. (Malvaceae) is a large tree found in tropical regions and coastal forests of India. The bark, leaves, flowers and fruits are useful in cutaneous infections such as scabies, psoriasis, eczema, ringworm and guinea worm (Anonymous,., 1995). The decoction of the bark is commonly used for the treatment of skin and liver diseases. Oil of the bark mixed with vegetable oil is useful in urethritis and gonorrhoea (Ilavarasan et al., 2003). The bark, root, fruits were used in dysentery, cholera and hemorrhoids (Ilavarasan et al., 2003). Gossypol was found to be the major component of *Thespesia populnea* (Akhila and Rani, 1993) producing antifertility effects in rats (Ghosh and Bhattacharya, 2004, Murthy et al., 1981) as well as in human beings (Qian and Wang, 1984). Four naturally occurring quinines . thespone, mansonone-d, mansonone-H, thespone and thespesone have also been extracted from heartwood of *Thespesia populnea* (Johnson et al., 1999). The fruits of the plant are used in Ayurveda for the control of diabetes (Sathyanarayana et al., 2004). The barks and flowers possess astringent, hepatoprotective and antioxidant activities in rats (Ilavarasan et al., 2003, Shirwaikar et al., 1995). It is believed that current analgesia inducing drugs such as opiates and NSAIDs are not useful in all cases, because of their side effects and potency. As a result, the search for other alternatives seems necessary and beneficial. In Southern part of India and Srilanka, the leaves and bark of this tree are still used to produce oil for the treatment of fracture wounds and as an anti-inflammatory poultice applied to ulcers and boils, as a folk medicine (Anon., 1995, Jayaweera, 1982). Whether these claims are valid is a subject of great interest and should be probed scientifically. With this aim we carried out an investigation of this plant's potential as an anti-inflammatory and analgesic in rodents.

## Distribution

Milo is native to coastal areas of the Indian and Pacific Ocean from East Africa and India to mainland Southeast Asia, Indonesia, and the Philippines. In the Pacific it grows from Papua New Guinea and the northern coast of Australia through the Solomons, Vanuatu, and Fiji. In Micronesia milo grows in Guam and the Mariana Islands, the Gilbert Islands (Kiribati), and in Palau, Yap, Chuuk, Pohnpei, Kosrae, and the Marshalls. In Polynesia milo is found in Tonga, Samoa, Niue, the Cook Islands, Tahiti, the Society Islands, the Tuamotos, and the Marquesas (Mueller-Dombois and Fosberg 1998). Current distribution Milo has been planted throughout the tropics and is naturalized in Tropical climates throughout the world from the Caribbean to Africa to the Pacific. The tree is believed to have been introduced to Hawai'i by early Polynesians, but it may be native to Hawai'i. It is documented on the Hawaiian islands of Ni'ihau, Kaua'i, O'ahu, Moloka'i, Maui, The hawai'i (Wagner et al. 1999).

## Material methods

- Sample collect
- Fixed in FAA solution (formaldehyde, ethanol, glacial acetic acid, in the proportion 5:90:5 by volume)
- Cut the transverse and longitudinal section
- stainwith safranin
- mount in glycerol

## Results

### Morphological character

Flowers are a typical hibiscus shape in appearance, bellshaped, 4–7 cm (1.5–2.5 in) in length, with five overlapping, broad, rounded petals. Color is pale yellow with a maroon spot at the base of each petal and with star-shaped hairs on outer surface. Flower stalks are 1.3–5 cm (0.5–2 in). Flowers open and close on same day, and the yellow flowers turn dark red or purple day in progressive. The alternate leaves are glossy green above and paler green below. Leaf blades are heart-shaped, 10–20 cm (4–8 in) long, and 6–13 cm (2.5–5 in) broad. Leaf stalks are long, 5–10 cm (2–4 in). Leaves are the lower crown turn yellow before falling to the ground. Milo fruits are brittle, dry, woody or papery seed capsules, rounded and flattened, containing five cells and several seeds. The brown or gray capsules, about 2.5–5 cm (1–2 in) diameter and 2 cm (0.8 in) tall, grow on short stalks cluster at the ends of the branches. Mature fruits may usually be found on trees year-round. The brown, hairy seeds are about 1 cm (0.4 in) long and 0.6 cm (0.2 in) broad. Seeds are blown short distances by wind but are more likely to be dispersed by water. Both the lightweight fruits and seeds can float from one island to another on ocean currents. There are between 3500 and 6700 seeds/kg (1600–3045 seeds/lb) (Parotta 1994).



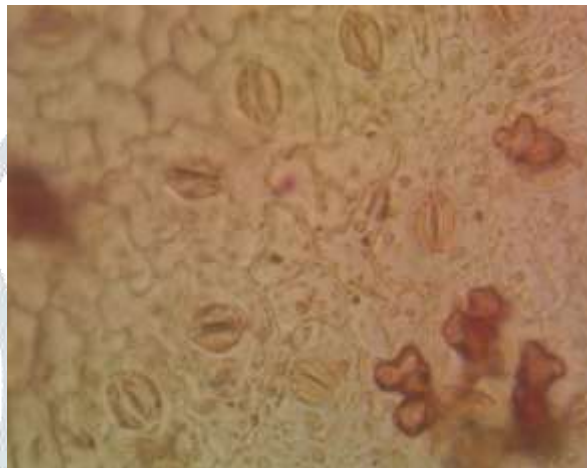
## Pollen and Stigma

The study of pollen morphology in relation to cytology, as termed cytopalynology (Lewis, 1965), has been recognized as a useful aid in cytological investigations as it yields valid clues for determining the ploidy status of plants (Bir and Sidhu, 1980; Bir and Sagoo, 1981; Bedi et al., 1981;). The application of pollen morphology in plant breeding has been realized from the observation that the pollen mass in any one plant is constituted of different morphological strains which may be identified on pollen morphological basis (Nair et al., 1974), and hence it is implied that in programs of plant breeding there is need for selection of pollen strains on a morphological basis. The morphological study of the pollen is very important. It is also applicable in genetic study, forensic science in tracing history of vegetation, which consists of individual species, community and climate change study. It is also applicable in gas, coal and oil industries. Apart from this it is also used in the field of agriculture, forestry, archaeology and plant geography. The order Malvales is a natural group characterized by the presence of stellate and mucilage cells or canals. In this order nectary glands are characterized by multicellular glandular hairs which are usually packed closely together to form cushion like growth. Previous records on the pollen morphology of Indian species of Malvaceae are very few (Benerjee, 1929; Sayeeduddin et al., 1942;). The pollen morphology of this family or some of its representatives has been included in many studies, for example Erdtman (1952); and more recently those of Surova & Velieve (1984) . Saad (1960) studied the pollen morphology of 35 species of Malvaceae. He emphasised the importance of the aperture and spine characteristics, as well as exine stratification, to distinguish between different taxa. Christensen (1986) studied the pollen of 120 species of Malvaceae using both light (LM) and scanning electron microscopy (SEM). She gave an account of the taxonomic and phylogenetic value of pollen characteristics in this family. Hosni and Araffa (1999) studied the pollen of 22 indigenous taxa of Malvaceae in Egypt with LM. They used pollen characteristics in combination with other morphological characteristics to differentiate between certain taxa. Palynologically, family Malvaceae is a stenopalynous and general features of pollen are relatively uniform (Christensen, 1986; Perveen, A., S. et al., 1994). Stigma possesses a specialized surface for catching and holding the pollen. The angiosperm stigma is generally considered a glandular structure whose secretion is important in the pollen stigma interaction. The main function of the stigma is to provide the pollen with water necessary for their germination. In many plants it also supplies the necessary medium for pollen germination in the form of exudates. The chief components of the exudates are of lipid and phenolic in nature. In addition, small amount of free sugar, amino acids, proteins and peptides are also present. The composition of the exudates may vary from species to species (Knox, 1984). Despite their morphological diversity, angiosperm stigmas can be divided into two basic types: 'wet' and 'dry' (Heslop-Harrison and Shivanna, 1977). 'Wet' stigmas produce a copious surface secretion that may either predominantly aqueous or predominantly lipidic. By contrast, 'dry' stigmas bear no surface secretion; instead the cuticle is overlaid by a condensed surface layer of protein, the proteinaceous pellicle (Hiscock, 2004). The detailed structure and functions of the receptive surface of the angiosperm stigma that part specialized for the receipt and early nurture of the male gametophyte have been relatively neglected through much of the present century.



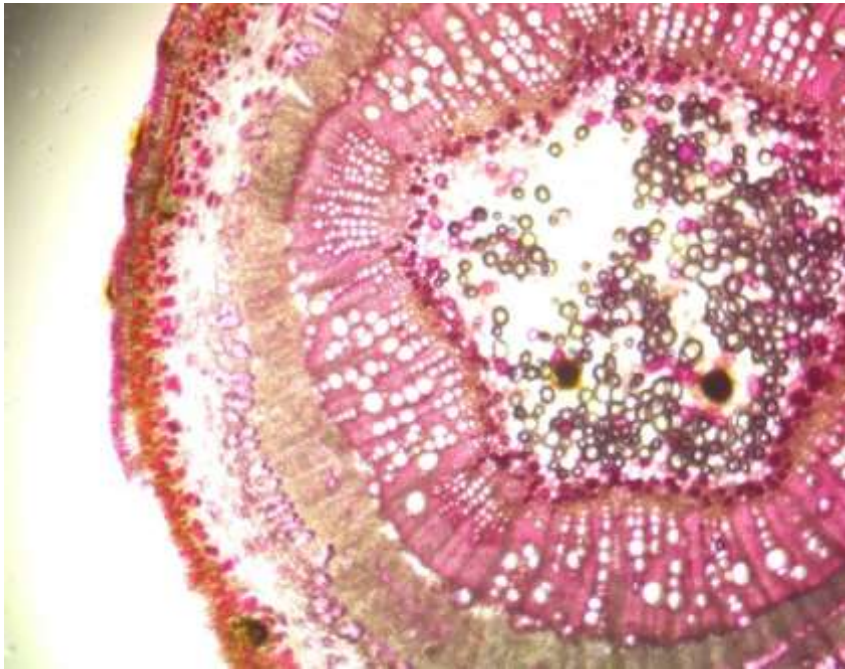
## Stomata

Stomata are the tiny openings on the surface of leaf for gaseous exchange. In green leaves they occur either on both surfaces (amphistomatic leaf) or on only one, either the upper (epistomatic leaf) or more commonly on lower that is hypostomatic leaf. Leaf epidermal anatomy, particularly stomatal architecture - the number, form, and arrangement of specialized epidermal cells associated with the stomatal guard cells. Stomatographic studies (i.e., those on stomatal architecture and sometimes other features) have shown that stomata can provide valuable taxonomic and systematic evidence. For the study of stomata the leaf pieces were boiled in concentrated nitric acid with little potassium chlorate added to it. The leaves turn brown and then yellowish white. They were then transferred to water to separate the epidermal peelings. These peelings were washed thoroughly, stained with aqueous Saffranine or Delafield Haematoxylin and mounted in Glycerine (Gupta, 1961). Stomata were sketched by using Erma Camera Lucida at 10 x 45X magnification. The terminology used in anatomical studies is in accordance with Dilcher (1974). *Thespesia populnea* Upper epidermis shows irregularly arranged epidermal cells. Hypostomatic. Lower epidermis shows paracytic, diacytic, anomotetracytic, anomocytic types of stomata with kidney shaped guard cells. Epidermal cells are irregular with wavy margin.



## Wood Anatomy

The transverse section (T.S.) in the upper part is approximately circular in outline. And shows an outer epidermis, followed by the cortex region, which consists of few rows of collenchyma and a wider zone of parenchyma cells. A continuous ring of vascular tissues traversed by medullary rays and central wide parenchymatous pith are also observed. Epidermis represented by a single row of rectangular cells with thin cuticle. Cortex consists of 2-3 rows of small, rounded, and thick-walled collenchyma cells without intercellular spaces, followed by 3-5 rows of large, oval, and thin-walled parenchyma cells having narrow intercellular spaces. The endodermis is parenchymatous and indistinct (clearly visible). The pericycle is parenchymatous with a few intermittent groups of lignified fibres. They're numerous scattered clusters of calcium oxalate are also observed in the pericyclic region. The phloem is comprised of thin cellulosic elements, including sieve tubes and companion cells, with associated phloem parenchyma; some of the latter contain clusters of calcium oxalate. The cambium is represented by several rows of tangentially arranged meristematic cells. The xylary region contains numerous lignified vessels, tracheids, wood fibres, and wood parenchyma. Xylem vessels are of spiral thickening. Wood parenchyma is polygonal with pitted walls. Medullary rays are uni- or biseriate traversing the xylem. The pith is wide and consists of rounded, thin-walled parenchyma cells containing clusters of calcium oxalate.



## Phytochemistry and Pharmacology

Phytochemical constituents of *T. populnea* include sesquiterpene quinones, sesquiterpenoids and flavonoids. Many studies have been conducted on the pharmacological properties of *T. populnea* with major activities of analgesic, anti-inflammatory, anti-diabetic and anti-hyperglycaemic reported in the bark, leaf, fruit and seed. Anticancer properties are reported in the wood. From the wood of *T. populnea*, sesquiterpene quinones such as 7-hydroxycadalene, thespesone, thespesone, and mansonones have been isolated. Subsequently, new sesquiterpenoids (populenes), together with mansonones, thespesone, gossypol and 6,6'-methoxygossypol have been isolated. Recently, sesquiterpene quinones, anthraquinones and sterols have been identified from the wood. From the other plant parts, sesquiterpene quinones have been reported in the leaves of *T. populnea*. Cyanidin rutinoside is the main anthocyanin of the flowers. Other compounds isolated from flowers include kaempferol 3-glucoside, quercetin 3-glucoside and rutin, and nonacosane, lupenone, myricylalcohol, lupeol,  $\beta$ -sitosterol and  $\beta$ -sitosterol- $\beta$ -D-glucoside. From the bark, gossypol has been isolated. Major components of the seed oil of *T. populnea* are linoleic acid (39%), palmitic acid (27%) and oleic acid (16%). Out of 14 fatty acids identified from the seed oil, steric acid methyl ester (47%) and palmitic acid methyl ester (39%) are dominant. Unlike the phytochemistry of *T. populnea* where information is limited, studies on its pharmacological properties are so extensive that they can only be listed in this short review. The pharmacological properties of the bark of *T. populnea* has been most extensively studied with anti-fertility, antioxidant, antimicrobial, anti-lipid peroxidative, hepatoprotective, antinociceptive, anti-inflammatory, anti-hyperglycemic, anti-diabetic, diuretic, anthelmintic, anti-psoriasis, memory enhancing and anti-diarrhoea activities reported. From leaves of *T. populnea*, antidiabetic, antioxidant, antimicrobial, analgesic, anti-inflammatory, anti-tumour, nephro-protective, alcohol-induced stress reduction,  $\alpha$ -amylase inhibition, anti-ulcer, immune-modulatory and wound healing activities have been reported. From fruits, antidiabetic, anti-hyperlipidemic, anti-hyperglycaemic, antioxidant, antibacterial, antipyretic, wound healing, anti-inflammatory and anthelmintic activities have been reported. Flowers possess antioxidant, antibacterial, more about this source text. Source text required for additional translation information antiviral, anti-steroidogenic, hepatoprotective and anti-inflammatory activities. Antimicrobial, anti-hyperglycaemic, analgesic, anti-inflammatory, analgesic, antipyretic and anti-fertility activities have been reported in seeds. Among the different plant parts, the wood and roots of *T. populnea* are the least studied. Only cytotoxic and anti-ulcer activities have been reported in the wood and antimicrobial activity in the roots. Although a broad spectrum of bioactivities have been reported in *T. populnea*, cytotoxic activity is only reported in the wood. Of the 19 compounds isolated from the wood of *T. populnea*, mansonone E strongly inhibited human cancer cells of MCF-7 and HT-29 with IC<sub>50</sub> values of 0.05 and 0.18  $\mu$ g/ml, and gossypol strongly inhibited KB and HeLa cells with IC<sub>50</sub> values of 0.04 and 0.08  $\mu$ g/ml, respectively. Thespisilactam is a unique sesquiterpenoid alkaloid isolated from the heartwood of *T. populnea* is small compound (C<sub>15</sub>H<sub>15</sub>NO<sub>3</sub>) containing benzo-indole scaffold. 3-O-Methylthespisilactam, a methylation product of , was found to possess anticancer activity against A2058 human melanoma cells targeting Janus activated kinase (JAK) and tyrosinase kinase (TYK). Inhibited JAK1 and TYK2 most potently with IC<sub>50</sub> values of 1.08 and 2.72 mM, respectively. A simple analysis showed negative correlation between the phytochemistry and pharmacology of *T. populnea*. With only gossypol reported in the bark. Conversely, phytochemical studies on the wood of *T. populnea* are most thorough with a variety of sesquiterpene quinones, anthraquinones and sterols isolated, and yet only antimicrobial, cytotoxic and anti-ulcer activities have

been reported by three references. Unaware of the imbalance between knowledge on the phytochemistry and pharmacology.

### Ethnomedicinal Uses;

The ethnomedicinal uses of the plant *Thespesia populnea* (Linn.) Soland. Suggested vital role in the treatment of various diseases. The leaves and fruits are used for treatment of inflammation. The leaves, roots, fruits, bark are used to treat various skin infections such as ring worms, warts, psoriasis, scabies, sprains, bruises and cutaneous diseases. Fruits and bark are used in treatment of urethritis & gonorrhea. Fruits are used in migraine headache. Bark is used in haemorrhoids and chronic dysentery. In ayurveda, root part suggested to remove 'vatta' and 'pitta' and also used as a tonic, aphrodisiac and treatment of burning of body and heart diseases. Flowers are used in itching.

### Phytochemical Studies;

"Bhendi" is rich in terpenes, lipids, glucosyl naphthoquinone compound; 3,6,9-Trimethyl-2,3-dihydrobenzo[de]chromene-7,8-dione and new sesquiterpene des, flavanoids and its derivatives. Heartwood of the plant constituted a sesquiterpene, ortho-quinines, thespesenone and dehydrooxoperezinone-6-methyl ether. The presence of new sesquiterpenoids, named populene A-H and quinones, mansonone-D, mansonone-H, thespone and thespesone showed significant cytotoxic and antibacterial activity. Heart wood also contains new mansonones, 7-hydroxy-2,3,5,6-tetra-hydro-3,6,9-trimethylnaphtho (1,8-B,C) pyran-4,8-dione. (8) Flowers of *Thespesia populnea* (Linn.) Soland. contains Gossypol. (9) It also contains flavone, 5,8-dihydroxy-7-methoxyflavone, an isoflavone, 7-hydroxy isoflavone and glycoside such as kaemferol-β-D-rutinoside. A rare flavanoid, quercetin-7-O-rhamnoglucoside, was isolated from this plant and confirmed by spectral studies which shows significant antihepatotoxic activity.

### Cytotoxic Activity;

Eight new sesquiterpenoids, named populene A - H, were isolated from dichloromethane extracts of the wood and dark heartwood of *Thespesia populnea* (Linn.) Soland. Together with 11 known compounds. Their structures were determined on the basis of spectroscopic analyses. The cytotoxic activity of isolated compounds was evaluated against four cancer cell lines: MCF-7, HeLa, HT-29, and KB. Mansonone E and (+)-gossypol showed significant activities. Their antibacterial properties against *Bacillus subtilis*, *Staphylococcus aureus*, and *Enterococcus faecalis* are also presented.

### Antimicrobial Activity;

In the study of roots of *Thespesia populnea* (Linn.) Soland. It was reported for antimicrobial activities by disc diffusion and broth dilution methods. The results from the disc diffusion method showed that ethanolic extracts could inhibit the growth of *Propionibacterium acnes*. The MIC (Minimum Inhibitory Concentration) values were the same (0.049 mg/ml) for both bacterial species and the MBC (Minimum Bacterial Concentration) values were 0.049 and 0.165 mg/ml against *Propionibacterium acnes* and *Staphylococcus epidermidis*, respectively. The investigation of the antimicrobial activity of alcoholic and aqueous extracts of stem barks by cup plate technique reported significant activity against gram positive bacteria, *Staphylococcus aureus*, *Streptococcus pyogenes*, and gram negative bacteria, *Escherichia coli* and *Pseudomonas aeruginosa*. The aqueous extract of *Thespesia populnea* (Linn.) Soland. Bark showed significant anti-microbial activity against the tested bacterial organisms compare to ethanolic extract. It also found that the methanolic extract of flowers of *Thespesia populnea* (Linn.) Soland. Showed synergistic activity with ofloxacin tetracycline. The MIC (Minimum Inhibitory Concentration) of methanolic extracts in combination with ofloxacin tetracycline using 12 different both gram positive and gram negative bacteria was found to be around (62.5 µg/ml to 1000 µg/ml). The highest synergism rate was attained against *Shigella boydii*. In screening of higher plants, the effect of aqueous extract of the leaves of the plant, *Thespesia populnea* (Linn.) Soland. were shown fungitoxic activity against conidial germination of *Drechslera oryzae*. Conjunctivitis is a condition that can be viral, bacterial, or allergic in origin. The tissue surrounding the eyes becomes inflamed and irritated and the eyes become red and watery are used to treat eye diseases, specifically

### Antioxidant Activity

Antioxidant activity of the aqueous and methanolic extracts of the *Thespesia populnea* (Linn.) Soland. Bark was investigated in rats by inducing liver injury with carbon tetrachloride: olive oil (1:1). The extracts exhibited significant antioxidant activity showing increased levels of glutathione peroxidase (GPX), glutathione S-transferase (GST), glutathione reductase (GRD), superoxide dismutase (SOD) and catalase (CAT) and

decreased level of lipid peroxidation (LPO). Aqueous and methanolic extracts, at a dose level of 500 mg/kg showed significant antioxidant activity against carbon tetrachloride-induced liver injury in rats.

### **Antidiabetic Activity**

The hypoglycemic and ant hyperglycemic effects of an alcoholic extract of the fruit of *Thespesia populnea* (Linn.) Soland. were investigated in both normal and alloxan-induced diabetes in rabbits. Blood samples were collected from marginal ear vein before and at 0.5, 1, 2, 4, 6, 8 and 12 h after the oral administration of 100, 200 and 300 mg/kg doses. Blood glucose was analysed by glucose-oxidase method using a visible spectrophotometer. Graded doses of the extract when given to both normal and diabetic rabbits produced significant reductions in blood glucose at the 6 h after extract administration ( $P < 0.001$ ). The effect was found to be dose dependent with all treatments at the doses administered. The present study clearly indicated a significant antidiabetic activity of the fruit of *Thespesia*.

### **Skin Diseases;**

The plant, *Thespesia populnea* (Linn.) Soland. traditionally claimed to be useful in the treatment of cutaneous infections such as scabies, psoriasis, ringworm, guineaworm, eczema and herpetic diseases. Screening for antipsoriatic activity was carried out by topical application of different extracts & isolated compounds (TpF-1, TpF-2 & TpS-2) of *Thespesia populnea* (Linn.) Soland. bark in the form of a cream using the Perry's scientific mouse tail model. Successive pet-ether extract showed maximum antipsoriatic activity (increased orthokeratotic region by 25%) amongst the extracts tested where as the compound TpF- 2 exhibited 38% increase in the same. The plant, *Thespesia populnea* (Linn.) Soland. shows promising anti-psoriatic activity. The plant, *Thespesia populnea* (Linn.) Soland. Used to treat a variety of skin ailments including wounds. The fruit and leaves of the plant showed potent wound healing activity. In the present study, the aqueous extract of *Thespesia populnea* (Linn.) Soland. fruit showed significant wound healing activity in the excision wound and incision wound.

### **Health Benefits Of Portia Tree**

Portia Tree grows in abundance in coastal areas. The beautiful tree can rise to an impressive height and produce beautiful flowers to decorate your garden. Its rich yellow flowers are what make people plant it at home. However, the plant also has a great medicinal value that can aid you in combating various diseases. It has been popularly used in ancient Ayurveda to cure diseases like arthritis, diarrhea, etc. Listed below are some of the popular health benefits of Portia Tree

#### **1. Treats wounds and abrasions**

Portia Tree has been used in traditional medicine for treating wounds and bruises. The plant has natural antibacterial and anti-inflammation qualities that can heal wounds and stop the spread of infection. Additionally, it can help alleviate local pain at the wounds through its healing abilities.

#### **2. Cures stomach problems**

Portia Tree is known to be an Ayurvedic cure for diarrhea. Additionally, it helps in combating problems like bloating and stomach pain. It can also work wonders on hemorrhoids that interfere with digestive health.

#### **3. Improves appetite**

According to ancient Ayurveda, Portia Tree is said to have the quality of Rasa. Rasa quality signifies that the plant can affect the appetite and make people feel the need to eat more. This is beneficial for people who want to gain weight or suffer from malnourishment.

#### **4. Treats arthritis**

Some studies have shown that Portia Tree has been used since ancient times to heal arthritis. Consuming extracts from the Portia plant helps to deal with symptoms that are related to arthritis.

## Traditional uses and benefits of Portia Tree

1. Portia tree is often used in traditional medicine, where the bark, root, leaves, flowers and fruits are all used to treat a range of ailments.
2. The heartwood consists of several sesquiterpenoid quinones, including mansonone D and H, thespone and thespesone, which are known to induce contact dermatitis, to inhibit tumor formation and to have antifungal properties.
3. It is useful in treating pleurisy, cholera, colic and high fevers.
4. The fruit juice is used to treat herpes.
5. Crushed fruit is used in a treatment for urinary tract problems and abdominal swellings.
6. Cooked fruit, crushed in coconut oil, provides a salve, which, if applied to the hair, will kill lice.
7. An extract of the fruit is applied to swollen testicles.
8. Leaf tea is taken as a treatment for rheumatism and urinary retention.
9. Decoction of the leaves is used in treating coughs, influenza, headache and relapses in illnesses.
10. Leaf sap and decoctions of most parts of the plant, are used externally to treat various skin diseases.
11. Juices from the pounded fruits, mixed with pounded leaves are used in a poultice to treat headaches and itches.
12. Decoction of the bark and fruit is mixed with oil and used to treat scabies.
13. Decoction of the bark is used to treat dysentery and hemorrhoids, and a maceration of it is drunk for colds.
14. Cold infusion of the bark is used in treating diabetes, gonorrhoea, yellow urine, and thrush.
15. Indigestion, pelvic infection, dysmenorrhoea, infertility, secondary amenorrhoea, appetite loss, ulcers and worms are also treated with the bark.
16. Inner bark is used to treat constipation and typhoid.
17. Stem is used in treating breast cancer.
18. Leaf and bark decoctions are taken as a remedy for high blood pressure.
19. Plant parts of Portia tree, particularly the bark, root, leaves, flowers, and fruits, are all used in a wide range of conditions like pleurisy, cholera, colic, fevers, herpes, urinary tract problems, abdominal swellings, hair lice, swollen testicles, rheumatism, coughs, influenza, headaches, skin diseases, hemorrhoids, colds, etc.
20. In Tonga, its bark is used to treat mouth infections among infants.
21. Decoction of leaves is used as emollient for itches.
22. Juice of fruit is used for herpetic diseases.
23. Decoction of bark is used for washing skin diseases.
24. Ground bark mixed with coconut oil is used for skin diseases.
25. Heartwood is used as remedy for bilious attacks and colic; the Malays use it for pleurodynia.

## Conclusion

In recent year ethnobotanical and traditional uses of natural compounds specially of plant origin received much attention as they are well tested for their efficiency and generally believed to be safe for human use they obviously deserved scrutiny on modern scientific lines such as phytochemical investigation biological evaluation on experimental animals modals toxicity studies investigation on molecular mechanism of action of isolated phytoprinciple and their clinical trials it is best classical approach in search in new lead molecules for management of various disease. Through screening of literature available on *Thespesia populnea* depicted the fact that is a popular remedy among the various ethnic groups, Vaidyas, and Hakins and ayurvedic practitioners for cure of variety of ailments. Following the traditional and folk claims, very little efforts have been made by the researchers to explore the theoretical potential of this plant it is interesting to note that crude organic and aqueous extract of only roots of *Thespesia populnea* have been screened for some pharmacological activities and found to possess anticancer, antimicrobial, free radical scavenging, immune modulating, hepatoprotective and anthelmintic potential. Till other part of the plant such as seeds leaves and seed oil which are documented to possess important medicinal virtues, are not explored scientifically for their biological potential.

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