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EVALUATING THE MEDICINAL AND HOMOEOPATHIC POTENTIALS OF LAWSONIA INERMIS MOTHER TINCTURE

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ABSTRACT

Introduction: Medicinal plants play a crucial role in traditional and modern medicine, offering diverse bioactive compounds for therapeutic use. Lawsonia inermis Linn. (Henna) is widely recognized for its medicinal and cosmetic applications. **Significance:** Rich in phytochemicals, L. inermis exhibits antimicrobial, anti-inflammatory, and hepatoprotective properties. It has been used in traditional and Homoeopathic medicine to treat various ailments, including liver disorders and general weakness. **Methodology:** A literature review was conducted using scientific databases to analyze the phytochemical composition, pharmacological properties, and Homoeopathic applications of L. inermis. **Results:** Studies indicate that L. inermis possesses significant medicinal properties, with Homoeopathic preparations like St. George's Lawsonia inermis Mother Tincture Q being used for liver-related issues and systemic health benefits. **Discussion:** The therapeutic potential of L. inermis supports its continued use in Homoeopathy and integrative medicine. However, further clinical research is needed to validate its efficacy and safety.

Conclusion: Lawsonia inermis is a valuable medicinal plant with diverse applications in traditional and Homoeopathic medicine. Its pharmacological potential warrants further exploration for broader clinical use.

KEYWORDS: Lawsonia inermis, medicinal plants, Homoeopathy, phytochemicals, liver disorders.

INTRODUCTION

Lawsonia inermisLinn (Lythraceae) is a perennial plant commonly called as Henna, having different vernacular names in India viz., Mehndi in Hindi, Mendika, Rakigarbha in Sanskrit, Mailanchi in Malayalam, Muruthani in Tamil, Benjati in Oriya, Mayilanchi in Kannada and Mehedi in Bengali. It is native to North Africa and South East Asia, and often cultivated as an ornamental plant throughout India, Persia, and along the African coast of the Mediterranean Sea. Henna grows better in tropical savannah and tropical arid zones, in latitude between 15° and 25° N and S, produces highest dye content in temperature between 35-45°C. The optimal soil temperature range for germination is 25-30°C. Henna leaves are very popular natural dye to colour hand, finger, nails and hair. The dye molecule, lawsone is the chief constituents of the plant; its highest concentration is detected in the petioles (0.5-1.5 %). In folk medicines, henna has been used as astringent, anti-hemorrhagic, intestinal antineoplastic, cardio-inhibitory, hypotensive, sedative and also as therapeutic against amoebiasis, headache, jaundice and leprosy.

MORPHOLOGY

Lawsonia inermis is a glabrous branched shrub or small tree (2 to 6 m in height). Leaves are small, opposite, entire margin elliptical to broadly lanceolate, sub-sessile, about 1.5 to 5 cm long, 0.5 to 2 cm wide, greenish brown to dull green, petiole short and glabrous acute or obtuse apex with tapering base. New branches are green in colour and quadrangular, turn red with age. Young barks are greyish brown, older plants have spine-tipped branchlets. Inflorescence has large pyramid shaped cyme. Flowers are small, numerous, aromatic, white or red coloured with four crumbled petals. Calyx has 0.2 cm tube and 0.3 cm spread lobes. The fruits are small, brown globose capsule, opening irregularly and split into four sections with a permanent style. Seeds have typical, pyramidal, hard and thick seed coat with brownish colouration.

Scientific classification

Kingdom: Plantae

Subkingdom: Viridaeplantae

Division: Tracheophyta

Subdivision: Spermatophytina

Class: Magnoliopsida

Order: Myrtales

Family: Lythraceae

Genus: Lawsonia

Species: inermis

ETHNOPHARMACOLOGY

Lawsonia inermis is a well known ethnomedicinal plant used cosmetically and medicinally for over 9,000 years. Its use in the Indian traditional folk medicines is well documented. Table 1 indicates the use of different parts of **L. inermis** in traditional system of medicines.

Description

It is much branched, deciduous, glabrous, sometime spinescent shrub or small tree with grayish brown bark, attaining a height of 2.4-5 m. It is cultivated as a hedge plant throughout India, and as a commercial crop in certain states of India for its dye. Leaves are 1.3-3.2 by 0.6-1.6 cm, elliptic or broadly lanceolate, acute or obtuse, often mucronulate, base tapering; petioles very short. Flowers are numerous, less than 1.3 cm. across fragrant, white or rose-colored, in large terminal pyramidal panicled cymes; pedicels short, slender. Calyx 3-5 mm, long broadly campanulate; lobes 2.5-3 mm, long, suborbicular or subreniform, undulate. Stamens 8, inserted in pairs on the calyx-tube. Capsules 6 mm, diameter; hlobose, slightly veined outside, supported by the persistent calyx and tipped with the style. Seed capsules are red, globose, about the size of a pea, with numerous tiny pyramidal, brown pitted seeds.

Cultivation

Henna grows better in tropical savannah and tropical arid zones, in latitude between 15° and 25° N and S, produces highest dye content in temperature between 35 - 45 °C. The optimal soil temperature range for germination is 25 - 30 °C. Henna leaves are very popular natural dye to colour hand, finger, nails and hair. The dye molecule, lawsone is the chief constituents of the plant; its highest concentration is detected in the petioles (0.5-1.5 %).

Table 1: Types of Lawsonia inermis.

Type of henna	Utilised plant	Family	Common name	Effects
Henna	Lawsonia inermis L.	Lythraceae	Henna tree, or Egyptian Privet or Mignonette tree	lighter or stronger shades of red

Neutral henna	Cassia obovata Collad and closely related Cassia and Senna species.	Fabaceae	Senna Italica	colourless
Black henna	Indigofera tinctoria L.	Fabaceae	True indigo	brown and black shades
Black henna	Isatis tinctoria L.	Brassicaceae	Indigo	brown and black shades
Mixed with henna	Terminalia chebula Retz.	Combretaceae	Myrabolan tree	a tannin mordant

Table 2: Ethnomedicinal uses of different parts of L. inermis.

Plant Parts	Traditional Uses
Root	Bitter, depurative, diuretic, emmenagogue, abortifacient, burning sensation, leprosy, skin diseases, amenorrhoea, dysmenorrhoea and premature greying of hair.
Leaves	Bitter, astringent, acrid, diuretic, emetic, edema, expectorant, anodyne, anti-inflammatory, constipating, depurative, liver tonic, haematinic, styptic, febrifuge, trichogenous, wound, ulcers, strangury, cough, bronchitis, burning sensation, cephalalgia, hemicranias, lumbago, rheumatalgia, inflammations, diarrhoea, dysentery, leprosy, leucoderma, scabies, boils, hepatopathy, splenopathy, anemia, hemorrhages, hemoptysis, fever, ophthalmia, amenorrhoea, falling of hair, greyness of hair, jaundice.
Flowers	Cardiotonic, refrigerant, soporific, febrifuge, tonic, cephalalgia, burning sensation, cardiopathy, amentia, insomnia, fever.
Seeds	Antipyretic, intellect promoting, constipating, intermittent fevers, insanity, amentia, diarrhoea, dysentery and gastropathy.

PHYTOCHEMISTRY OF L. INERMIS

Much work is done in the field of phytochemical investigation of the plant. The chemical constituents isolated from L. inermis are napthoquinone derivatives, phenolic compounds, terpenoids, sterols, aliphatic derivatives, xanthones, coumarin, fatty acids, amino acids and other constituents.

Table 3: Phytochemicals found in various parts of L. inermis.

Compounds	Plant Parts
Napthoquinone derivatives **Lawsone (2-hydroxy 1,4-naphthoquinone)**	Leaves
1,3-dihydroxy naphthalene, 1,4-napthaquinone, 1,2-dihydroxy-4-glucosylnaphthalene	Leaves
Isoplumbagin	Stem bark
Phenolic conpounds **Lawsoniaside (1,3,4-trihydroxynaphthalene 1,4-di-β-D-gluco-pyronoside), Lalioside (2,3,4,6-tetrahydroxyacetoxy-2-β-D-glucopyranoside)** **Lawsoniaside B (3-(4-O-a-D-glucopyranosyl-3,5-**	Bark, Leaves

dimethoxy) phenyl-2E-propenol), syringinoside, daphneside, daphnorin, agrimonolide 6-O-β-D-glucopyranoside, (+)-syringaresinol O-β-D-glucopyranoside, (+)-pinoresinol di-O-β-D-glucopyranoside, syringaresinol di-O-β-D-glucopyranoside, isoscutellarin	
Terpenoids **3β, 30-dihydroxylup-20(29)-ene (hennadiol), (20S)-3β, 30-dihydroxylupane, Lupeol, 30-nor-lupan-3β-ol-20-one, betulin, betulinic acid, lawnermis acid (3β-28β-hydroxy-urs-12,20-diene-28-oic acid) and its methyl ester**	Bark, Seeds
Sterols **Lawsaritol (24β-ethycholest-4-en-3β-ol)** **Stigmasterol and β-sitosterol**	Roots, Leaves
Aliphatic constituents **3-methyl-nonacosan-1-ol, n-tricontyl n-tridecanoate**	Stem bark
Xanthones **Laxanthone I (1,3 dihydroxy-6,7 dimethoxy xanthone), Laxanthone II (1-hydroxy-3,6 diacetoxy-7-methoxyxanthone), Laxanthone III (1-hydroxy-6-acetoxy xanthone)**	Whole plant
Coumarins **Lacoumarin (5-allyoxy-7-hydroxycoumarin)**	Whole plant
Flavonoids **Apigenin-7-glucoside, apigenin-4-glycoside, luteolin-7-glucoside, luteolin-3-glucoside**	Leaves
Essential oil **-(Z)-2-hexenol, linalool, α ionone, β ionone, α-terpineol, terpinolene, δ-3-carene and γ-terpineol**	Leaves
Other chemical constituents **Hennotannic acid, glucose, gallic acid, amino acid** **Trace metal – Cu, Ni, Mo, V, Mn, Sr, Ba, Fe and Al** **Minerals – Na_2O, CaO and K_2O**	Whole plant

Traditional uses

1. It is used for the treatment of epilepsy and jaundice, and for dyeing grey hair.
2. It is used as a remedy for malignant ulcers.
3. The Ayurvedic Pharmacopoeia of India indicated the use of leaves in dysuria, bleeding disorder, prurigo and other obstinate skin diseases.
4. The leaf is used in vulnerary, diuretic, headache, hemicranias, lumbago, bronchitis, boils, ophthalmia, syphilitis, sores, amenorrhoea, scabies, and spleen diseases and favours the growth of the hair.
5. The bark is given in jaundice and enlargement of the spleen, also in calcalous affections and as an alternative in leprosy and obstinate skin diseases.

6. It is used as medicinal plant because of its attributed antibacterial, antifungal, antiamoebiasis, astringent, antihemorrhagic, hypotensive and sedative effect.

Medicinal importance

1. It is used for antidiarrheal.
2. It is used for antidysenteric.
3. It is used for astringent.
4. It is used for emmenagogue.
5. It is used for liver tonic.
6. It is used for antifungal.

Ethnobotanical Uses

1. Henna leaf has an orange-red dye and leaf paste or powder is widely used for decorating hands, nails and feet with patterns.

2. Flowers are very fragrant and used to extract a perfume, which is used as base for local scents. An infusion of the flowers is a valuable application to bruises. Decoction of the flowers is describes as an emmenagogue.

3. Seeds are deodorant. Powered seeds with real ghee (clarified butter) are effective against dysentery.

4. The bark is applied in the form of a decoction to burns and scalds. It is given internally in a variety of affections, such as jaundice, enlargement of the spleen, calculus, as an alternative in leprosy and obstinate skin affections.

5. Root is considered as a potent medicine for gonorrhoea and herpes infection. Root is astringent may be pulped and used for sore eyes. Pulped root may also be applied to the heads of children for boils.

6. The root is supposed to be useful in treatment of hysteria and nervous disorders.

Antiviral Activity

Phytochemical Composition and Antiviral Mechanism

The primary bioactive compound, **lawsone**, has been studied for its redox properties, enabling it to interfere with viral replication and protein synthesis. Flavonoids and tannins in

henna extracts exhibit potent antioxidant and immunomodulatory effects, which help enhance host resistance to viral infections. The antiviral mechanism of L. inermis includes **inhibition of viral adsorption and penetration**, **disruption of viral envelope integrity**, **inhibition of viral DNA/RNA polymerases**, and **modulation of cytokine responses** that support viral clearance.

Experimental and In Vitro Evidence

Several in vitro studies have demonstrated the antiviral activity of Lawsonia inermis against both DNA and RNA viruses. For example:

- **Herpes Simplex Virus (HSV-1 and HSV-2):** Ethanolic extracts of henna leaves have shown significant cytotoxic and inhibitory effects against HSV in Vero cell lines, reducing plaque formation and viral load.
- **Influenza Virus:** Henna extracts have demonstrated neuraminidase inhibition activity, which plays a vital role in preventing the release of new viral particles.
- **Hepatitis B Virus (HBV):** Methanolic extracts of L. inermis showed promising results in inhibiting HBV surface antigen expression in HepG2.2.15 cells, indicating potential application in chronic hepatitis management.
- **Human Immunodeficiency Virus (HIV):** Preliminary screenings revealed the potential of lawsone to inhibit reverse transcriptase activity, an essential enzyme in HIV replication.

Traditional Use Supporting Antiviral Claims

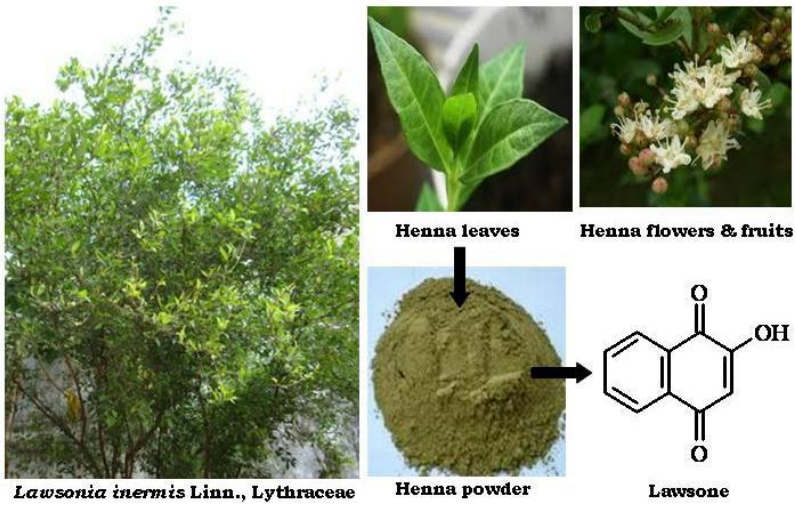
Ethnobotanical documentation indicates the widespread use of henna in treating viral skin conditions like **herpes labialis**, **verruca vulgaris (warts)**, and **whitlow**, pointing to its efficacy against cutaneous viral infections. The topical application of henna paste or oil over infected lesions not only reduces viral spread but also promotes faster healing, potentially due to its anti-inflammatory and astringent properties.

Current Research and Future Directions

Recent studies have shifted toward **nano-formulations of henna extracts**, such as lawsone-loaded nanoparticles, to enhance bioavailability and targeted delivery in viral therapy. Furthermore, computational molecular docking analyses have identified lawsone as a

potential ligand for viral proteins such as proteases and polymerases, suggesting its drug-like properties.

To validate these findings, **in vivo studies**, **clinical trials**, and **toxicological evaluations** are required. Additionally, synergistic combinations with existing antiviral agents may provide integrative therapeutic solutions for drug-resistant viral strains.



Homoeopathic Preparations

Homoeopathic remedies derived from Lawsonia inermis are prepared through a process of serial dilution and succussion (vigorous shaking) of the plant extract. These preparations are available in various potencies, such as mother tinctures and higher dilutions, tailored to individual patient needs. For instance, products like St. George's Lawsonia Innermis Mother Tincture Q are utilized to address symptoms related to liver ailments and general weakness.

Homoeopathic Applications

In Homoeopathy, Lawsonia inermis is employed to address a range of health issues:

- **Liver Disorders:** Homoeopathic preparations of henna are believed to assist in managing liver-related ailments, including symptoms associated with jaundice.
- **General Weakness:** It is used as a health supplement to combat general debility and improve overall vitality.
- **Digestive Issues:** Henna-based remedies may aid in alleviating common digestive disturbances.

CONCLUSION

Lawsonia inermis Linn (Family: Lythraceae) is a much branched glabrous shrub or small tree (2-6 m in height), cultivated for its leaves although stem bark, roots, flowers and seeds have also been used in traditional medicine. This plant is a worldwide known cosmetic agent used to stain hair, skin and nails. The plant is reported to contain Lawsone, Esculetin, Fraxetin, Isoplumbagin, Scopoletin, Betulin, Betulinic acid, Hennadiol, Lupeol, Lacoumarin, Laxanthone, Flavone glycosides, Two pentacytic triterpenes. The plant has been reported to have analgesic, hypoglycemic, hepatoprotective, immunostimulant, antiinflammatory, antibacterial, wound healing, antimicrobial, antifungal, antiviral, antiparasitic, antitrypanosomal, antidermatophytic, antioxidant, antifertility, tuberculostatic and anticancer properties. Lawsonia inermis is a valuable medicinal plant with extensive traditional and Homoeopathic applications. Its bioactive constituents provide promising therapeutic benefits, particularly in hepatoprotection and antimicrobial treatments. Given its safety profile and affordability, L. inermis remains an important candidate for further research and clinical validation in integrative healthcare.

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