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A COMPREHENSIVE REVIEW STUDY ON *LAWSONIA INERMIS* (HENNA) LEAF EXTRACT AND POTENTIAL FOR HERBAL CREAMS

Mohammad Saif[1], Girish Kumar Vyas[2], Nitin Nama[3], M. K. Gupta[4]

[1]Research Scholar, Career Point School of Pharmacy, Career Point University, Kota

[2]Associate Professor, Career Point School of Pharmacy, Career Point University, Kota

[3]Assistant Professor, Career Point School of Pharmacy, Career Point University, Kota

[4]Professor, Career Point School of Pharmacy, Career Point University, Kota

Corresponding Author: saif.alam710@gmail.com, girishvyas10@gmail.com

Abstract

Lawsonia inermis, commonly known as henna, is a well-documented medicinal plant traditionally used for a variety of dermatological ailments. Rich in phytoconstituents such as lawsone, flavonoids, and tannins, its leaf extract exhibits potent antibacterial, antifungal, anti-inflammatory, antioxidant, and wound-healing properties. These pharmacological activities make it an ideal candidate for incorporation into topical herbal formulations, particularly creams. With the global shift toward natural and safer skincare solutions, *Lawsonia inermis* offers a plant-based alternative to synthetic compounds, supporting the treatment of skin infections, acne, eczema, and burns. Its efficacy in enhancing collagen production, accelerating wound healing, and reducing oxidative stress underscores its multifaceted role in skincare. This review highlights the ethnobotanical background, phytochemistry, and dermatological potential of *L. inermis*, emphasizing its relevance in the formulation of modern herbal creams. The integration of such traditional botanicals into contemporary topical products reflects the ongoing convergence of herbal medicine and evidence-based dermatology.

Keywords: Lawsonia inermis, Henna leaf extract, Herbal creams, Skin pharmacology, Natural antifungal agents

1. Introduction

Lawsonia inermis, commonly known as henna, has a long-standing history of medicinal use, particularly for treating skin ailments. In ancient Egypt, India, and other regions, henna was traditionally used for its cooling, soothing, and antimicrobial properties [1]. The leaves of the henna plant were applied to treat a variety of skin conditions, such as wounds, burns, eczema, and fungal infections. Its therapeutic role in skincare continues to be recognized today, especially in cultures that value natural remedies. Recently, there has been a significant rise in

the use of herbal remedies for dermatological care, driven by the increasing demand for natural, safe, and effective alternatives to synthetic products. Among these, herbal creams have gained popularity for their ability to deliver active ingredients directly to the skin, offering targeted treatments for various skin conditions [2,3].

Topical formulations like creams are an ideal choice for localized treatment, as they facilitate the absorption of bioactive compounds, providing a sustained release of active ingredients to the affected areas. *Lawsonia inermis* leaf extract, with its antifungal, antibacterial, and skin-healing properties, has shown promise in the development of herbal creams for treating conditions such as fungal infections, eczema, and acne [4,5]. This review explores the potential of *Lawsonia inermis* leaf extract in the formulation of herbal creams, focusing on its antifungal and dermatological benefits. With the growing interest in natural skincare solutions, henna represents a valuable addition to the field of topical therapeutic products.

2. **Objectives:** The objective selection is must for any activity. So, the objectives are given below for this review:
   - To review traditional uses of *Lawsonia inermis* in skincare.
   - To assess the antifungal and skin-healing properties of *Lawsonia inermis* leaf extract.
   - To explore the potential of *Lawsonia inermis* in herbal creams.
   - To highlight the role of natural ingredients in modern skincare.
3. ***Lawsonia inermis* (Henna):** *Lawsonia inermis*, commonly known as henna, is a deciduous shrub native to tropical and subtropical regions of Africa, Asia, and the Middle East. It belongs to the family *Lythraceae* and grows up to 6 meters in height [6,7]. The plant's leaves are particularly prized for their dyeing properties, used in traditional body art and cosmetics. Additionally, henna has medicinal uses in Ayurvedic and Unani medicine for its antiseptic, anti-inflammatory, and cooling effects. The plant's flowers are small and white or red, producing small fruits. Henna is culturally significant in various traditions, especially in bridal and festive ceremonies [8,9].
4. **Botanical Classification:**
   - Kingdom: Plantae
   - Division: Magnoliophyta
   - Class: Magnoliopsida
   - Order: Myrtales
   - Family: Lythraceae
   - Genus: *Lawsonia*
   - Species: *L. inermis* [7,8]

5. Phytochemical Composition of *Lawsonia inermis* Leaf Extract

Lawsonia inermis leaves are rich in diverse bioactive compounds responsible for its therapeutic effects. The primary active compound is lawsone (2-hydroxy-1,4-naphthoquinone), known for its potent antifungal, antimicrobial, and antioxidant activities [1]. In addition, the leaves contain flavonoids, tannins, alkaloids, saponins, and glycosides, which contribute to wound healing, anti-inflammatory, and skin-protective properties. These phytochemicals vary based on the extraction technique used [10]. Solvent extraction (using ethanol, methanol, or aqueous solvents) is the most common and efficient method, while cold pressing and infusion methods are also employed for specific formulations [11,12]. Each method affects the concentration and efficacy of the extracted compounds, thus influencing the pharmacological outcomes.

Table 1: Phytochemical Composition of *Lawsonia inermis [11,12]*

Sr. No.	Phytochemical Class	Major Components
1	Naphthoquinones	Lawsone
2	Flavonoids	Luteolin, Apigenin
3	Tannins	Gallic acid, Ellagic acid
4	Alkaloids	Hennotannic acid derivatives
5	Saponins	Triterpenoid saponins
6	Glycosides	Anthraquinone glycosides

6. Pharmacological Activities of *Lawsonia inermis* (Henna):

Lawsonia inermis is a medicinal plant widely known for its antimicrobial, anti-inflammatory, antioxidant, and various other therapeutic activities. The key phytoconstituent responsible for many of its effects is lawsone (2-hydroxy-1,4-naphthoquinone).

Table 2: Pharmacological Activities of *Lawsonia inermis* (Henna)

S. No.	Activity	Description of study
1	Antibacterial [15]	*Lawsonia inermis* exhibits strong antibacterial effects against both Gram-positive (e.g., *Staphylococcus aureus*) and Gram-negative bacteria (e.g., *Escherichia coli*), attributed mainly to lawsone and flavonoids which disrupt bacterial cell walls and inhibit replication.
2	Antifungal [16]	The leaf extract shows potent antifungal activity against species such as *Candida albicans*, *Aspergillus niger*, and

		Trichophyton rubrum. This is due to interference in fungal cell membrane integrity by phytoconstituents.
3	Antiviral [17]	Some studies suggest henna possesses inhibitory effects on DNA and RNA viruses by interfering with viral replication and possibly enhancing host immunity, though mechanisms need further elucidation.
4	Anti-inflammatory [13]	Lawsone and other polyphenols in *L. inermis* inhibit inflammatory mediators like prostaglandins and leukotrienes. It reduces edema and inflammation in carrageenan-induced rat paw models.
5	Antioxidant [13]	The plant exhibits strong antioxidant activity due to flavonoids and phenolic acids, which neutralize free radicals (ROS) and prevent oxidative stress-linked cellular damage.
6	Analgesic [17]	Ethanolic and aqueous extracts produce significant pain-relieving effects in acetic acid-induced writhing and hot plate models, likely by modulating prostaglandin synthesis.
7	Antimalarial [17]	Henna has shown in-vitro activity against *Plasmodium falciparum* by inhibiting schizont development, suggesting a potential for adjunct use in malaria treatment.
8	Hepatoprotective [17]	Extracts protect liver cells from damage induced by toxins like carbon tetrachloride, by boosting antioxidant enzymes like catalase and glutathione peroxidase.
9	Antidiabetic [17]	Henna extracts reduce blood glucose levels in streptozotocin-induced diabetic rats, possibly through increased insulin secretion and β-cell regeneration.
10	Wound healing	Topical application of henna accelerates wound contraction, enhances epithelialization, and increases collagen deposition, promoting faster healing.
11	Anticancer [17]	Lawsone and related compounds show cytotoxic activity against cancer cell lines such as HeLa and MCF-7 by inducing apoptosis and inhibiting cell proliferation.
12	Antiparasitic [17]	Extracts exhibit lethality against various helminths and protozoa by impairing energy metabolism and damaging

		parasite surface membranes.
13	Immunomodulatory [17]	Henna modulates immune response by enhancing lymphocyte proliferation and cytokine production, thereby strengthening the host defense system.

7. **Topical Potential of *Lawsonia inermis* Leaf Extract in Herbal Creams :** Lawsonia inermis (Henna) leaf extract holds promising potential for use in herbal creams due to its rich phytochemical profile, including lawsone, flavonoids, and tannins. These compounds provide antibacterial, antifungal, and anti-inflammatory properties, making the extract effective in managing wound infections, skin irritation, and acne [18]. Its antioxidant activity protects skin from oxidative stress and aging. The extract promotes faster wound healing, enhances collagen synthesis, and supports skin regeneration. Due to its cooling and soothing nature, it is also beneficial in formulations for burns and dermatitis [19]. Furthermore, its natural origin and biocompatibility make it a safe alternative to synthetic agents in topical applications. Thus, Lawsonia inermis is a valuable ingredient for developing multi-functional herbal creams in modern Phyto cosmetics [20].

8. **Conclusion:**

Lawsonia inermis, widely known as henna, demonstrates significant potential in herbal skincare due to its antifungal, antibacterial, anti-inflammatory, and wound-healing properties. Rich in bioactive compounds like lawsone, flavonoids, and tannins, it offers a natural, safe, and effective alternative to synthetic topical agents. Its incorporation into herbal creams supports skin protection, regeneration, and relief from various dermatological conditions. With its historical use and scientifically backed pharmacological activities, henna stands out as a valuable component in the formulation of modern phytocosmetic products.

9. References:

1. Gali-Muhtasib H, Pinna A, Al-Ghussein M. *Lawsonia inermis* (Henna) as a therapeutic agent: Pharmacological properties and potential applications. *Phytomedicine*. 2008;15(8):665-72.
2. Abdallah EM, Al-Marzooq Z, Al-Dosari M, et al. Antifungal activity of *Lawsonia inermis* (Henna) leaves: A potential treatment for dermatophytosis. *Phytotherapy Research*. 2013;27(2):185-90.

3. Agrawal P, Sahu P, Tiwari P. Herbal formulations: A promising approach for dermatological diseases. *Journal of Herbal Medicine*. 2019;9(4):27-34.
4. Zubair M, Choudhary MI, Hameed A, et al. *Lawsonia inermis* (Henna): A natural healing herb and its dermatological applications. *Journal of Medicinal Plants*. 2015;5(2):19-24.
5. Rajasekaran A, Srinivasan M. Current trends in the use of herbal medicine for skin diseases. *Indian Journal of Dermatology*. 2016;61(2):155-161.
6. Riaz M, Zubair M. *Lawsonia inermis* (henna): A review of its phytochemical and pharmacological properties. *Phytochem Rev*. 2014;13(3):485-501.
7. Shukla A, Gupta A, Tripathi A. Medicinal uses of *Lawsonia inermis*: A review. *Pharmacogn Rev*. 2013;7(13):67-72.
8. Omer Z, Eid HH. Henna: A historical review on its medicinal and cosmetic uses. *Phytomedicine*. 2020;11(2):19-24.
9. Ali M, Hoda N, Khan S. *Lawsonia inermis*: Traditional and modern therapeutic uses. *J Pharm Biomed Sci*. 2016;6(4):27-32.
10. Kumar S, Bhowmik D, Biswajit C. Traditional medicinal uses and pharmacological properties of *Lawsonia inermis*. *Journal of Chemical and Pharmaceutical Research*. 2010;2(1):91–95.
11. Al-Rubiay KK, Jaber NN, Al-Mhaawe BH, Alrubaiy LK. Antimicrobial efficacy of henna extracts. *Saudi Med J*. 2008;29(5):678–683.
12. Nayak BS, Patel KN. Pharmacognostic studies of the *Lawsonia inermis* leaves. *Asian Journal of Pharmaceutical and Clinical Research*. 2010;3(4):88–91.
13. Ali BH, Bashir AK, Tanira MO. Antioxidant activity of Lawsonia inermis leaves. *Fitoterapia*. 1995;66(5):444–446.
14. Muhammad HS, Muhammad S. The use of Lawsonia inermis Linn. (henna) in the management of burn wound infections. *Afr J Biotechnol*. 2005;4(9):934–937.
15. Singh M, Singh N, Khare PB, Rawat AKS. Antimicrobial activity of some important medicinal plant against plant and human pathogens. *Biotechnol Lett*. 2008;30(5):1083–1090.
16. Saadabi AM, Ayoub SMH. Comparative in vitro antimicrobial activity of *Lawsonia inermis* L. *Acute Med*. 2009;12(1):1–5.
17. Bhatnagar M, Kanwar M, Sharma PK, Singh R. Biological activities of Lawsonia inermis: A review. *Int J Pharm Sci Rev Res*. 2015;31(2):148–152.

18. Ali BH, Bashir AK, Tanira MO. Anti-inflammatory, analgesic, and antipyretic effects of *Lawsonia inermis* L. (henna) in rats. *Phytother Res*. 1995;9(4):263–265.
19. Muhammad HS, Muhammad S. The use of *Lawsonia inermis* Linn. (Henna) in the management of burn wound infections. *Afr J Biotechnol*. 2005;4(9):934–937.
20. Abdelwahab SI, Hassan LEA, Sirat HM, Yagi SM, Koko WS, Mohan S, et al. Anti-inflammatory activities of *Lawsonia inermis* leaves extract. *Int J Pharmacol*. 2009;5(3):290–295.