

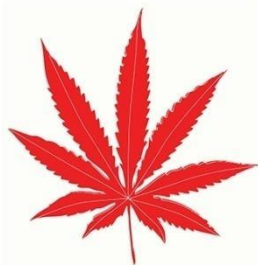


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Conference Abstract

EVALUATION OF ANTIBACTERIAL AND ANTI-INFLAMMATORY ACTIVITIES OF LAWSONIA INERMIS

Ahdania Batool¹, Jamshaid Akbar², Kanwal Ashiq¹, Maryam Khalid¹

1. Faculty of Pharmacy, Superior University Lahore, 6-km Main Raiwind Road, Lahore 31-Tipu Block, New Garden Town, Lahore.
2. Department of Pharmacy Practice, Faculty of Pharmacy, The Islamia University Bahawalpur, 63100, Bahawalpur, Pakistan

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Correspondance:

Ahdania Batool, Faculty of Pharmacy,
Superior University Lahore, New
Garden Town, Lahore, Pakistan
E: kanwal.ashiq@superior.edu.pk

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Abstract

The therapeutic potential of medicinal plants has recently increased due to their less toxic and cost-effective nature, which calls for further study. Lawsonia inermis (L. inermis) leaves are frequently used in traditional medicine for dysmenorrhea, leprosy, skin diseases, and hair dye, but little is known about their antibacterial and anti-inflammatory properties. The aim of study is to investigate phytochemical content and antimicrobial potential of plant against a wide range of microorganisms using water, methanol, chloroform and n-hexane as extracting solvents. Sequential extraction of dried leaves with selected solvents i.e. n-hexane, chloroform, methanol and water was done. Proximate analysis of leaves performed as per USP 2015 method prescribed for botanical origin. Phytochemicals analysis of primary metabolites (Protein, lipids and carbohydrates) and secondary metabolites (alkaloids, tannins, flavonoids and glycosides etc) was also performed. UV visible profiling, FTIR, and atomic absorption were performed for the purpose of standardization. Antimicrobial sensitivity testing was performed by well diffusion method against several bacterial strains (*Staphylococcus aureus*, *Streptococcus pneumoniae*, *Klebsiella pneumonia*, *Pseudomonas aeruginosa*, *Mycobacterium tuberculosis* and *Peptostreptococcus anaerobius*), with tetracycline taken as standard. Results were interpreted in accordance with CLS 2021 recommendations. Utilizing the protein denaturation method, *in vitro* anti-inflammatory evaluation was performed. Values from the proximate analysis fell well within the USP analysis 2015 guidelines' ranges. Numerous primary and secondary metabolites were found, according to the qualitative analysis. Iron, calcium,

Competing Interests:

The authors declare no competing interests

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sodium, and potassium were found in the sample after a mineral content analysis. Lawsonia inermis extracts demonstrated considerable antimicrobial activity at concentrations (200, and 400 mg/mL), which was comparable to the activity of standard drug. The sequence of both concentrations of different extracts used for antimicrobial testing was found as: methanol > water > chloroform > hexane extracts. As methanolic extracts showed highest efficacy it was selected for further MIC studies and anti-inflammatory effect. The results were comparable with standard drug tetracycline with MIC value of 9.2 mg/ml and methanolic extract (12.3 mg/mL) gave excellent antibacterial activity against all strains. Anti-inflammatory activity of methanolic extract was found to be 85.045 % as compared to Diclofenac sodium 86.885% taken as a standard.

Conclusion: Leaves of *L. inermis* extracts revealed the presence of bio-active constituents which are known to exhibit medicinal as well as physiological activities. They also have potent broad-spectrum antibacterial agents, particularly in the methanolic extract, which has supported their use in folk medicine to treat a variety of illnesses and skin infections. Further, anti-inflammatory activity of the plant extract is comparable to a standard drug diclofenac.

Keywords: Lawsonia inermis ; Antibacterial activity; Anti-inflammatory activity; Medicinal plants

Declaration

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