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TO STUDY OF ANTIBACTERIAL ACTIVITY OF *LAWSONIA INERMIS* LEAF EXTRACT

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ABSTRACT

Medical factory have veritably important place as they not only maintain the health and vitality of mortal beings and creatures. India is a largest patron of medicinal shops and correctly called the '' Botanical Garden of the World '' the factory *Lawsonia inermis*. L. Family – Lythraceae. Generally known as Henna or Mehandi is known as ornamental parcels. The effect of water and chloroform excerpt of the leaves of the *Lawsonia inermis* (Henna factory) against the primary raiders of burnt was delved. Clinical isolates of staphylococcus aureus, streptococcus sp, Pseudomonas Aeruginosa, candida albicans, Fusarium oxysporum and Asparagillus niger were treated with excerpt of leaves of L. inermis of antimicrobial exertion using invitro agar, objectification system and well prolixity system independently. The factory has been reported to have analgesic, antimalarial, hypoglycemic, hepatoprotective, antiinflammatory, antibacterial, antimicrobial, antifungal, antiviral, antiparasitic, antidermatophytic, antioxidant and antianthalmintic tuberculostatic and anticancer properties.

The review gives a view substantially on traditional uses, phytochemistry, pharmacological action of factory.

Keywords: *Lawsonia inermis* L . Traditional medicine anti-inflammatory enzyme inhibitor , phytochemistry, pharmacological action

INTRODUCTION

Bacteria are microorganisms that beget complaint of some of cause fatal complaint in humans. Every time millions of people die because of these microorganisms. The adding of bacteria inside the mortal body takes advantages of any weakness plant in body organs. Plant has been to treat humans, creatures and factory complaint from old. Herbal drugs have been known to man for century.Henna factory *Lawsonia inermis*linn, is such a factory known for healing attributes and now the subject of violent scientific study. Though it was used for colorful purpose. The antifungal property wasn't yet delved. Therefore the present study was conducted to estimate its antifungal eventuality. *Lawsonia inermis* (Henna) is an cosmetic evergreen factory cultivated in the tropics. It belongs to family Lythraceae in sudan it's traditionally used to develop red and black colouring to hands, bases andhair. In some occasions similar as marriage and religious carnivals. Reverse – Egyptian privet, *Lawsonia alba*. Biological source Henna correspond of fresh or dried leaves of factory *Lawsonia inermis* Lam. Geographical source Hennais indigenous to Africa

and is largely cultivated in Egypt, sudan, carribean is let, Florida, India and China. It's annulled and cultivated in tropics of America, Egypt, India, and part of Middle east.

Microscopic characters: -(1) Colour :- Greenish brown (2) Odour:- Characteristics (3) Taste:-Bitter and astringent.

Chemical constituents:– The active constituents of leaf is Lawsone (0.5- 1.0) other constituent are 5-10 % gallic acid , white resin , sugar , and tanins and xanthones are other content of leaves. Lawsone the main colouring constituent said to be degradation product of primary glycosides hennosides A, B , and C .

Chemical test :- Extract from henna leaves with water by boiling and filter and cool. This decoction fades on addition of acid while depend by addition of alkali . Standards of quality :- Moisture content :- Not more than 9% . Ash content :- Not more than 15% . Tannin content:- 10% . Water soluble extracts :- 25-33% . Uses:- Used as a favourite hair dye either alone or in combination for treatment of grey hair . It is used in several hair care product like rinses , conditioners , applications . Henna impart orange red colour which is more stable in acidic medium (pH 5.0).

Lawsone the active constituent of leaves shown to have antibacterial and antifungal properties. Today we are witnessing a great deal of public interest in use of Herbal remedies. Further more many westernal drugs had been origin in plant extract. We are going to prepare the Gel of (Henna) *Lawsonia inermis* Lin, Used as an antifungal, antimicrobial, antibacterial, antiparasitic activity .

MATERIALS AND METHODS

Micro-organisms:- Five pathogenic bacteria due to disease caused by it are obtained from AL-hussein hospital and given numbers 1,2,3,4 and 5. This bacterias are *pseudomonas aeruginosa, pseudomonas oryzihabita, proteusvaraplis, klebsiella pneumonia and staphyllococcus aureus*.

Extraction Process:-

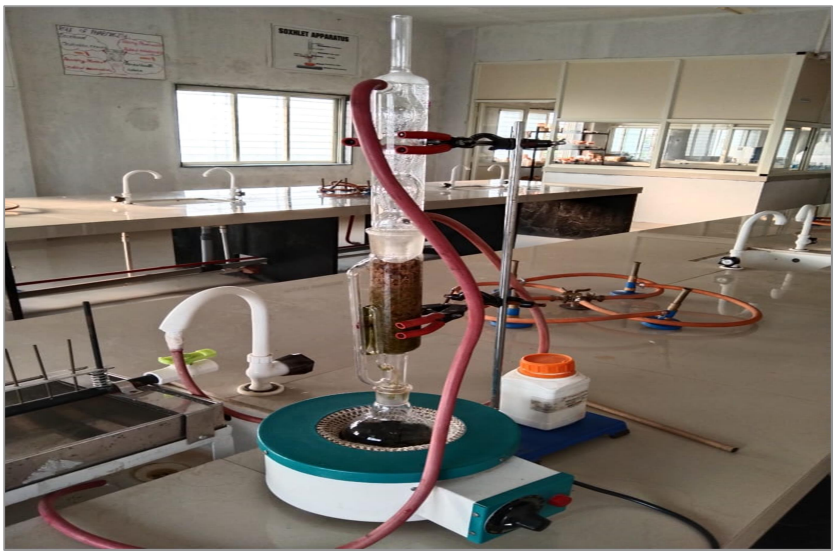

Figure 1

Figure 2

Take dried leaves of (Henna) Lawsonia insermis

Fill the thimble of the soxhlet apparatus

Add the solvent(ethanol-200ml)

Set the assembly of this extraction

Keep this process of extraction continued till 48 hrs at 60^0 c

Complete the 6 to 7 cycles of this process

Collect the extract

Evaporate

Semisolid mass was formed

Use these semisolid or final extract as a active ingredient to prepare the gel of (Henna) *Lawsonia inermis* used as an antifungal ,antibacterial.

Determination of Best solvent:-

Ethanol, Chloroform, Ethyl Acetate are the best solvents used for the extraction of (Henna) *Lawsonia inermis*.

Method of preparation of Gel:-

Figure 3

Take 5ml distilled water + Methyl paraben and Propyl paraben

↓

Heating on water bath

↓

After the cooling add propylene glycol

↓

Then add different concentration of Heena extract

↓

At last full mixed ingredients added in carbopol 934 gel with properly

↓

Continuous stirring add tri-ethanolamine dropwise for adjust the pH (6.8-7)

Evaluation of Herbal Gel:-

PH measurement:-

The pH conductivity of gel formulation where determined by using digital pH meter .The glass electrode was calibrated with the solutions determined for the equipment (pH of 4.00 and 7.00) and the conductivity measurement was done in millivolts (mv). The preparation was left for about 15 min for attaining equilibrium while measuring. The analysis of pH and conductivity of formulation were done in triplicate and average values were calculated.

Determination of viscosity:-

Viscosities of the formulated gel were determined using Brookfield Viscometer. Spindle no. 7 and spindle speed 60 rpm at 25 degree celsius were used for gels, corresponding dial reading on the viscometer was noted. Then the spindle was successively lowered. The dial reading was multiplied by factor given in the viscometer catalog.

Table 1: Tests

Sr. no.	Components	Tests	Results
1.	Alkaloids	Wagners reagent	+ + +
2.	Anthraquinones	Chloroform	+ + +
3.	Flavonoids	Sodium hydroxide	+ +
4.	Phenols	Ferric chloride	+ + +
5.	Saponins	Frothing	+ +
6.	Tanins	Sodium chloride	+
7.	Triterpenes	Sulphuric acid	+ + +
8.	Steroids	Acetic anhydride	+
9.	Reducing sugar	Fehlings solution	+
10.	Carbonyls	2,4-Dinitrophenylhydrazin	+ + +
11.	Phlobatanin	Hydrochloric acid	+

Key:+ = Low concentration,+ + = Moderate concentration,+ + + = High concentration

RESULTS

The current investigation showed that Henna plant possess good antimicrobial activity against tested fungi. The obtained result demonstrated antifungal activity of both extracts. The cup agar diffusion method revealed antifungal activity of extract against yeast and mould demonstrated by area of inhibition zone around the wells, while inhibition of growth revealed antifungal activity against dermatophytes. The ethanol extract has shown significant activity against yeast compared to petroleum ether extract. The inhibition zone induced by ethanol extract at concentration of 10 mg /ml was found to be 26.3 + or – against saccharomyces cerviviae. The ethanol extract displayed fungicidal activity to tested moulds at a concentration of 5 mg /ml and fungistatic activity to *Aspergillums flavour* at a concentration of 10 mg /ml. The result in below table show that percentage of substance using extraction are 14.94, 38.66, 2.5, 1.75, by using each of solvents.

Table 1

Sr. no.	Extraction solvent (100ml)	Original weight of plant powder	Weight of extract	% of extract materials.
1.	Ethanol	53.95 gm	20.86 gm	38.66 %
2.	Chloroform	42.55 gm	6.36 gm	14.94 %
3.	Ethyl acetate	20 gm	0.5 gm	2.5 %
4.	Distilled water	20 gm	0.35 gm	1.75 %

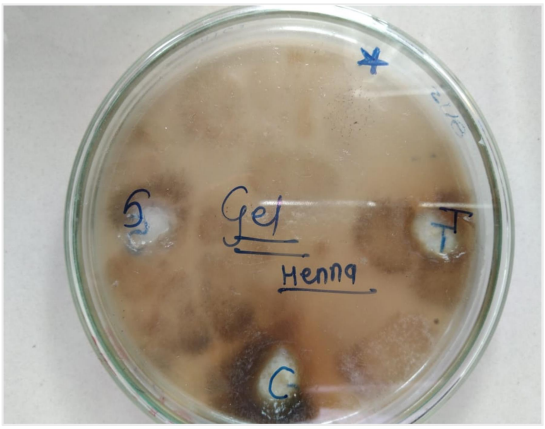

Figure 4

DISCUSSION

Lawsonia inermis leaves have antibacterial activity against many types of bacteria including staphylococcus aureus, klebsila pneumonia where ethanol is used as a solvent. In comparison with present study *Lawsonia inermis* leaves which consist of alkaloids, flavonoids, tanins, phenolics using Acetone 100% In our study we founf in result that the *Lawsonia inermis* leaves have minimum inhibitory concentration for *staphylococcus aureus* and *klebsiella pneumonia* is 11 mg/ml but in other study the minimum inhibition concentration for these bacteria is 25 mg/ml that mean our extract has more activity than that test and these contrast may be due to differences in solvent and differences in concentration of solvent Also the other research show that *Lawsonia inermis* leaves have antibacterial activity against *Pseudomonas aeruginosa* and Escherichia coli using ethanol as a solvent. Comparing this results with our results using *Lawsonia inermis* leaves with acetone 100% in our study and ethanolic extract in other research, we see that our extract has antibacterial activity against *Pseudomonas aeruginosa* in Mueller Hintone agar well diffusion test and diameter of inhibition zone is 17.33mm but in other test the diameter of inhibition zone of *Lawsonia inermis* leaves with ethanol

against *Pseudomonas aeruginosa* in 15mm that mean our extract is more active than ethanolic extract and this is either due to less activity of their solvent than our solvent or due to the concentration of methanol that they have been used which is less activity.

CONCLUSION

From result of present study we can concluded that the extract of *Lawsonia inermis* leaves by acetone 100% has high antibacterial activity against the pathogenic bacteria that isolated from patients.

Recommendation:-Other study on *Lawsonia inermis* leaves is to purify the compound which owns the effectiveness of antibacterial pathogenesis.

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