

PREPARATION OF HERBAL OINTMENT USING *PERGULARIA DAEMIA*

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Abstract: Medicinal plants are significant in human health care system. In general, plants are used as folkore medicines by the villagers. The effects of plant extracts have been studied throughout the world. One such ethanomedicinal plant is *Pergularia daemia*. It is a fetid smelling perennial herb distributed in tropical and subtropical regions. The leaves of *Pergularia daemia* is used for healing of wounds since ancient times. The present study aims to isolate wound pathogens from clinical samples and to prepare herbal lotion using the leaves of *Pergularia daemia*. This study also determines the effect of herbal lotion on wound pathogens by Agar well diffusion method. The pathogens such as *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Escherchia coli* were successfully isolated. The herbal lotion inhibited *Staphylococcus aureus*, followed by *Pseudomonas aeruginosa*, and *Escherchia coli*. The results suggested that *Pergularia daemia* has potential effect over wound pathogens and can be used as ointment for wound infections.

Keywords- *Pergularia daemia*, herbal lotion, wound pathogens, agar well diffusion method

I. INTRODUCTION

Medicinal plants have antimicrobial properties and they are used since traditional Indian system of medicine mostly in Ayurveda and Unani. Leaves are also used for its therapeutic purposes. It is being used as a source of medicinal agents for antibacterial, anti helminthic, astringent, emetic, febrifuge, sedative and stimulant (Divya, *et. al.*, 2014). Natural products provide natural antibiotics which acts as the basis for therapy of bacterial infections (Tambekar and Khante, 2010).

Medicinal plants usually contain many biological active ingredients and are used primarily for treating mild or chronic ailments (Goyal, *et. al.*, 2008). According to world health organization (WHO), about 80% of the world population depends chiefly on the plant based traditional medicine especially for their primary healthcare needs. Plant medicines are used to prevent and treat infectious diseases. Plants are rich in secondary metabolites such as tannins, alkaloids, terpenoids and flavonoids having been found in vitro since they have antimicrobial properties and may serve as an alternative, effective, cheap and safe antimicrobial for the treatment of microbial infections (Cragg, *et. al.*, 1997; Cowan, 1999).

Pergularia daemia belonging to Asclepiadaceae family is a latex perennial twinning herb. It is commonly present along the roadsides of tropical and subtropical regions (Pankaj , 2003). It is commonly known as “Veliparuthi” in tamil and “Hariknot” in English. The leaves of *Pergularia daemia* contain flavonoids, alkaloids, terpenoids, tannins, saponins, steroids and carbohydrates (Aanjaneyuju *et al.*, 1998). Leaves are used to treat catarrhal infection and infantile diarrhoea, stomach ache and tetanus (Irvine *et. al.*, 1952), leprosy and haemorrhoids (Thatoi *et. al.*, 2008), nasobronchial disease, stomach pain, antihelmetic and expectorant (Ndukwu and Ben –Nwadibia 2005), headache, cough and chest pain (Iganacimuthu *et al.*, 2008), alopecia. Bruised leaves are used against eye sores and to cure wound infections (Irvine *et. al.*, 1952).

The present study attempts to determine the antibacterial activity against wound pathogens using the herbal lotion prepared from the leaves of *Pergularia daemia*.

II. MATERIALS AND METHODS

2.1 Collection of clinical samples:

Pus samples were collected from wound infected persons by using sterile cotton swabs. The swabs were immediately immersed into saline.

2.2 Isolation and Identification of pathogenic bacteria:

Pus samples were used to isolate the bacterium. The pus samples were collected aseptically and then streaked on Nutrient agar, Mannitol salt agar, Pseudomonas agar medium, EMB agar medium. The isolated organisms were identified by Gram staining.

2.3 Collection of Plant:

The medicinal plant sample was collected from Tirukoilur, Villupuram district, Tamilnadu. The leaves of *Pergularia daemia* were selected for testing its antibacterial studies. The leaves of *Pergularia daemia* were washed thoroughly with distilled water to remove dust particles. Then the leaves were shade dried and powdered by using mechanical grinder.

2.4 Preparation of herbal lotion:

5g of white soft paraffin and 3 g of petroleum jelly was heated and melted at 76°C. To the melted solution, 10 g of powdered sample was added and stirred continuously. After 30 minutes, the solution was filtered using muslin cloth and cooled.

2.5 Antimicrobial activity:

The antimicrobial activity was carried out by agar well diffusion method against wound pathogens (Murray, *et.al.*, 1995). The organisms were spread over the Muller hinton agar and wells were made using cork borer. The herbal lotion was introduced into the plate in different concentrations (10 µl, 20 µl, 30 µl). Then the plates were incubated for 24 hours. After 24 hours, the plates were examined for the zone of inhibition.

III. RESULTS AND DISCUSSION

Wound pathogens such as *Staphylococcus aureus*, *Escherichia coli*, and *Pseudomonas aeruginosa* were isolated from pus samples. *Staphylococcus aureus* is the common wound pathogen which can cause severe infections. The herbal lotion prepared is in green colour and semi solid in consistency. This herbal lotion possesses antibacterial activity and shows effective result against wound pathogens and the results are summarized in table 1. The zone size increases as the concentration increases. The maximum zone of inhibition is seen in *Staphylococcus aureus* (20mm). The lotion shows minimum inhibitory effect over *Escheriachia coli*. It is a normal flora and acts as opportunistic pathogens. The antimicrobial activity is due to the disruption of membranes by terpenes and their complex (Urzua, *et. al.*, 1998). Plant based antimicrobials shows more effect than synthetic antimicrobials (Iwu, *et. al.*, 1999). Thus, it is evident that the formulated herbal lotion is effective against wound pathogens.

Table 1. Results of zone of inhibition using herbal lotion.

PATHOGENS	10µl	20µl	30µl
<i>Staphylococcus aureus</i>	14mm	17mm	20mm
<i>Pseudomonas aeruginosa</i>	10mm	13mm	17mm
<i>Escherichia coli</i>	5mm	8mm	10mm

IV. CONCLUSION

The formulated herbal lotion shows more effect on *Staphylococcus aureus* and it can be used as ointment for wound infections. This study provides evidences for the antibacterial activity of *Pergularia daemia* leaves which are capable of medicinal usage. Further pharmacological and phytochemical investigations are being carried out to identify its medicinal profile in the field of medicine.

REFERENCES

- [1] Aanjaneyulu, A.S.N., Raju, D.V.S., Srinivasa Rao, (1998). Chemical evaluation of *Pergularia extensa*. Indian Journal of Chemistry, Vol 37B, pp. 318-320.
- [2] Cowan M.M (1997), Plant products as antimicrobial agents. Clinical Microbiology Reviews, Vol. 12, pp. 564-582.

- [3] Cragg G.M, Newman D.J, Sander K.M (1997), Natural products in drug discovery and Development. Journal of Natural Products, Vol. 60, pp. 52-60.
- [4] Divya N, Thenmozhi S, Suresh kumar BT and Selvan M (2014), Antibacterial Activity of Medicinal Plant against Wound Infected Pathogens. International Journal of Pharmaceutical Sciences and Research, Vol. 5(11).
- [5] Goyal B.R, Goyal R.K, and Mehta A.A (2008), Phyto-Pharmacognosy of *Archyranthes aspera*: AReview. Pharmacognosy Reviews, Vol 1:1.
- [6] Ignacimuthu, S., Ayyanar, M., Sivaraman, S., (2008). Ethnobotanical study of medicinal plants used by paliyar tribals in Theni district of Tamilnadu, India. Filoterapia, Vol 79, pp. 562-568
- [7] Irvine, F.R., (1952). Supplementary and emergency food plants of West Africa. Economic Botany, Vol. 6, pp. 23-40.
- [8] Iwu MW, Duncan AR, and Okunji CO (1999), New antimicrobials of plant origin. In: Prespectives on new crops and new uses, edited by Janick. J, pp. 457-462.
- [9] Murray PR, Baron EJ, Pfaller MA, Tenover FC, Tenover FC (1995). Manual of clinical microbiology. 7th ed. Washington DC: ASM. p. 1773
- [10] Ndukwu, B.C., and Ben-Nwadibia, N.B., (2005). Ethnomedicinal aspects of Plants used as species and condiments in the Nigeria delta area of Nigeria. Ethnobotanical leaflets, Vol. 10.
- [11] Pankaj, O., (2003). Doomar or gular (*Ficus glomerata*) as medicinal herbs in Chattisgarh, India.
- [12] Tambekar, DH. and Khante, BS (2010). Antibacterial evaluation of medicinal plants used by *korkus* In melghat forest against gastrointestinal infections. International Journal of Pharmaceutical Sciences and Research. Vol. 3(9), pp. 120-128
- [13] Thatoi, H.N., Panda, S.K., Rath, S.K., and Dutta, S.K., (2008). Antimicrobial activity of ethnomedicinal uses of some medicinal plants from similar Biosphere resume, Orissa. Asian Journal of Plant Sciences, Vol. 7, pp. 260-267
- [14] Urzua A, Caroli M, and Vazquez L (1998). Antimicrobial study of the resinous exudates and diterpenoids isolated from *Eupatorium salvia* (Asterceae). Ethanopharmacological journal. Vol. 62, pp. 251-254.

