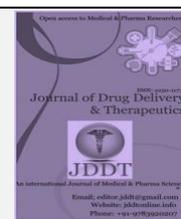
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Research Article

Preparation and Evaluation of Sothaghna Lepa Possessing Antimicrobial Activity

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ABSTRACT

The majority of the population in developing countries uses plants or plant preparations in their basic health care. Many plant species have been proved to have antimicrobial activity. Lots of the antibiotics had been at the beginning derived from micro-organisms even as the chemotherapeutic agents are from vegetation. Together with other dosage varieties, natural drugs are additionally formulated within the type of ointment. An ointment is a viscous semisolid preparation used topically on a variety of body surfaces. Thus, the main objective of the present study is to formulate and evaluate a polyherbal ointment with antimicrobial activity. Ointments were formulated using ethanolic extracts (by continuous hot soxhlation) of Punarnava, Devadaru, Sunthi, Siddartha & Sigru, were evaluated for its physicochemical properties. The ethanolic extracts of the chosen plants were taken in specific ratio randomly and the antimicrobial tests of the combinations had been applied. Ointments were all set making use of special concentrations of the extracts with the aid of fusion procedure utilizing Aloe vera gel as a base. Formulations had been then tested for its physicochemical properties like, pH, spread ability, viscosity and visualisation gave satisfactory results. Probably the most powerful mixture used to be then determined via evaluating the results of the zone of inhibition given through distinct extract ratios on *Escherichia coli*, *Staphylococcus aureus* of antimicrobial undertaking against gram positive and gram negative organisms. The entire formulations confirmed predominant recreation against selected species. The formulations are found to be very efficacious in all the parameters which has conducted and also found enhance antimicrobial property. Overall result of this study reveals that this is an effective antimicrobial ointment.

Keywords: Sothaghna lepa, antimicrobial activity, Punarnava, Devadaru, Sunthi, Siddartha & Sigru

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INTRODUCTION:

Herbal medication, also called botanical treatment or phytomedicine, refers to the use of any plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. Herbal drug treatments are in general used to furnish first-line and common health one cheap relief. Even in areas where cutting- swiftly in up to date years. Medicinal vegetation is principal sources for pharmaceutical manufacturing. Medicinal plants and herbal drugs account for a giant percent of the pharmaceutical market edge treatment is to be had, the curiosity on herbal drug treatments and their utilization had been growing¹

1. PUNARNAVA:-

Boerhavia diffusa is a species of flowering plant in the four o'clock family which is commonly known as Punarnava (meaning that which rejuvenates or renews the body in Ayurveda), red spider ling, spreading hogweed, or tarvine. It is taken in herbal medicine for pain relief and other uses.

The leaves of *Boerhavia diffusa* are often used as a green vegetable in many parts of India.

Boerhavia diffusa is widely dispersed, occurring throughout India, the Pacific, and southern United States. This wide range is explained by its small fruit, which are very sticky and grow a few inches off the ground, ideally placed to latch on to small migratory birds as they walk².

DEVADARU

EdrusDeodara is a high mountain tree that occurs in many locations from 1000 to 3000 m in the Himalaya. Its natural range spans parts of Afghanistan; Tibet, India (Himachal Pradesh, Jammu- Kashmir, Uttar Pradesh); Nepal; and Pakistan. It usually grows on silicate mother rocks. The best trees are found on deep, well-drained soils³.

The use of *C. Deodaru* in Ayurvedic medicines is well known. The plant yields a medicinal essential oil by distillation of the wood which is used for treatment of a wide range of ailments from fevers and dysentery, to bronchitis, and snake

bites. A resin obtained from the wood is used externally to treat bruises, skin diseases and injuries to joints. The leaves are used in the treatment of tuberculosis. Oil obtained from the seed is applied externally to treat skin diseases.

The essential oil is used as insect repellent on the feet of horses, cattle and camels. It also has anti-fungal properties and has some potential for control of fungal deterioration of spices during storage. Due to its anti-fungal and insect repellent properties, rooms made of *Cedrusdeodaru* wood are used to store meat and food grains like oats and wheat in Himachal Pradesh. In Himachal people suffering from asthma or other respiratory problems are advised to sit under a Deodar tree early in the morning⁴.

SUNTHI,

Ginger (*Zingiberaceae officinale*) is a flowering plant whose rhizome, it is widely used as spice & folk medicine. It is herbaceous perennial which grows annual pseudo stems bearing narrow leaf blades⁵.

SIGRU

Mustard plant is a plant species in the genera *Brassica* and *Sinapis* in the family Brassicaceae. Mustard seed is used as a spice. Grinding and mixing the seeds with water, vinegar, or other liquids creates the yellow condiment known as prepared mustard. The seeds can also be pressed to make mustard oil, and the edible leaves can be eaten as mustard greens⁶.

Generally perceived as health benefiting spice, mustard seeds are indeed very rich in phytonutrients, minerals, vitamins, and anti-oxidants⁷.

Being one of the chief oil seeds, mustards are indeed very high in calories; 100 g of seeds provide 508 calories. Nonetheless, the seeds are made of quality proteins, essential oils, vitamins, minerals, and dietary fiber.

The seeds are high in essential oils as well as plant sterols. Some of the important sterols include such as *brassicasterol*, *campesterol*, *sitosterol*, *avenasterol*, and *stigmasterol*. Some of the glucosinolate and fatty acids in the seeds are *sinigrin*, *myrosin*, *erucic*, *eicosanoic*, *oleic*, and *palmitic acids*

SIDDARTHA

Moringa is a great source of vitamins, protein, amino acids, beta-carotene, and different types of phenolics. Different parts of moringa contain important minerals: the plant provides a rare and rich combination of uercetin, kaempferol, and caffeoylquinic Moringa benefits your health in many ways. beta-sitosterol and zeatin.

Moringa has been used for centuries in different parts of the world as a traditional herbal medicine. Moringa works as circulatory and cardiac stimulant. It contains antiulcer, anti-inflammatory, diuretic, antispasmodic, and antioxidant properties. Moringa is also attributed cholesterol lowering, antihypertensive, antiepileptic, antipyretic, hepatoprotective, antidiabetic, antifungal and antibacterial abilities⁸.

MATERIALS AND METHODS:-

COLLECTION OF DRUGS

The plant materials were collected in the month of November 2018. The collected plant materials were separated and are then dried under shade drying for 4-5 days. Then the dried plant materials were grinded, sieved to get nearly crystalline powder.

MATERIALS, SOLVENTS & REAGENTS:-

Ethanol, Soxhlet apparatus, rotary apparatus.

Extraction procedure:-

1. The powdered drugs are extracted in soxhlet apparatus continuously extraction is done by using ethanol as solvent
2. The chamber containing the dried drug slowly fills with solvent. The compound will then dissolve in the ethanol. When the soxhlet chamber is almost full, the chamber is automatically emptied by a siphon side arm, with the solvent running back down to the distillation flask.
3. This cycle may be allowed to repeat many times, until the clear solution appears from the siphon tube.
4. After extraction the solvent is collected and mark was removed.

Alcohol separation from solvent:-

- The extracted solvent which is collected & put into rotatory apparatus for alcohol separation.
- The rotary apparatus into which solvent was kept & is operated at temp of 40°C & beaker was rotated at the speed of 150rpm.
- The alcohol separated which is removed & drug was collected.

PREPARATION OF OINTMENT:-

- After complete evaporation of alcohol from the solvent, the five drugs are mixed together.
- The mixed drugs are used to prepare aloe vera gel ointment.

Formulation 1:

About 40 ml of water is taken in a beaker methyl paraben is dissolved in water & propylene glycol is added. Then the solution is stirred at high speed using stirrer. The slowly carbopol 940 is added to the beaker containing above solution. Then Aloe vera gel is incorporated. After smooth dispersion is obtained, the preparation is allowed to stand, permitting entrapped air to separate. Then gelling agent triethanolamine added slowly which stirring with plastic spatula to avoid air entrapment. Then remaining quantity water is incorporated. The extract was added under stirring.

Formulation 2:

The gel was prepared by adding Aloe vera gel to half of the quantity of water and stirred at high speed continuously on stirrer, propylene glycol and methyl paraben were dissolved in remaining proportion of water and added to above solution with continuous stirring at high-speed, then extract 0.5%, 1% and 3% in the ratio (2:2:1) was added slowly with stirring, then slowly carbopol 940 was added to the beaker containing above solution. Then triethanolamine added slowly (drop wise) with stirring with plastic spatula to avoid air entrapment.

Ingredients	Formulation 1 (%w/w)	Formulation 2 (%w/w)
Carbapol 940	0.6	0.6
Aloevera gel	2	1
Triethanolamine	1.3	1.3
Propylene glycol	6	6
Methyl paraben	0.15	0.15
Plant extract	1	0.5
Water	Upto100%	Upto100%

RESULTS:-

The formulations were then evaluated for their physical parameters.

EVALUATION TEST RESULT:- 1) VISCOSITY OF OINTMENT

Formulation- 1	Formulation- 2
1221 cp	2533 cp

2) pH:-

Formulation- 1	Formulation- 2
4.1	4.6

3) Spreadability:-

Formulation - 1	Formulation - 2
8.60 (g.cm/sec)	8.86(g.cm/sec)

4) Visualization

	Formulation - 1	Formulation - 2
Colour	Pale yellow	Dark yellow
Odour	Characteristics	Characteristics

DISCUSSION:-

Literatures revealed that the selected 5 drugs (punarnava, devadaru, sunthi, sigru, & siddhartha) have antimicrobial

activity. Hence an attempt was made to formulate a polyherbal ointment as in different proportions were prepared by extraction method using aloevera gel as the base. The formulations were then evaluated for its physicochemical parameters and to compare its antimicrobial activity. Extraction was done using ethanol as the solvent by successive soxhlation method. The antimicrobial activity of prepared polyherbal ointments are evaluated by different tests like viscosity, spreadability, pH, & visualization.

CONCLUSION:

In the present experimental study showed that it is possible to develop and evaluate the anti- microbial polyherbal ointment with ethanolic extract of plant materials of different proportions (Punarnava, Devadaru, sunthi, Siddhartha & Sigru) which is useful in the treatment of skin diseases like microbial infection. Hence, the study concludes that an efficient antiseptic ointment with antimicrobial activity can be formulated from the ethanolic plant extracts which can also be used for various skin infections.

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