

## Formulation and Evaluation Turmeric Antiseptic Herbal Ointment

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**ABSTRACT:** Most of the antibiotics were originally derived from micro-organisms while the chemotherapeutic agents are from plants. Herbal medicine refers to the use of any plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. Along with other dosage forms, herbal drugs are also formulated in the form of ointment. An ointment is a viscous semisolid preparation used topically on a variety of body surfaces. The objective of the study was to formulate and evaluate the turmeric antiseptic herbal ointment from the local medicinal plants. The ethanolic extracts of the selected plants were taken in different ratio randomly, Then the minimum inhibitory concentration of the effective combination was found out. The ointment base was prepared and formulation of ointment was done by incorporating the active ingredients in most effective ratio in the base by trituration. After the completion of the formulation, quality of the ointment

**Key words:** Herbal ointment, Turmeric, Aloe vera, Neem minimum inhibitory concentration, irritancy, spreadability, diffusion, stability was assessed in terms of irritancy, spreadability, diffusion and stability.

### I. INTRODUCTION:

An antiseptic is an antimicrobial substance or compound that is applied to living tissue/skin to reduce the possibility of infection. Antibacterial activity is the ability of a substance to inhibit or kill bacterial cells. Different types of antibiotics and chemotherapeutic agents are being used in the treatment of one form of disease or the other. Most of these antibiotics were originally derived from micro-organisms while the chemotherapeutic agents are from plants. Herbal medicine, also called botanical medicine or phytomedicine, refers to the use of any plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. Long practiced outside of conventional medicine, herbalism is becoming more mainstream as up-to-date analysis and research show their value in the treatment and

prevention of disease. Plants had been used for medicinal purposes long before recorded history. Scientists found that people in different parts of the globe intended to use the same or similar plants for the same purposes. Recently, the World Health Organization estimated that 80% of people worldwide rely on herbal medicines for some aspect of their primary healthcare. For most herbs, the specific ingredient that causes a therapeutic effect is not known. Whole herbs contain many ingredients, and it is likely that they work together to produce the desired medicinal effect. Herbalists prefer using whole plants rather than extracting single components from them. Whole plant extracts have many components. These components work together to produce therapeutic effects and also to lessen the chances of side effects from any one component. Several herbs are often used together to enhance effectiveness and synergistic actions and to reduce toxicity. Traditional medicine is an important source of potentially useful new compounds for the development of chemotherapeutic agents. The first step towards this goal is the screening of plants used in popular medicine. Plant drugs are frequently considered to be less toxic and free from side effects than the synthetic ones. In an earlier study, medicinal plants have been reported to be very beneficial in wound care, promoting the rate of wound healing with minimal pain, discomfort, and scarring to the patient. The objective of the study was to formulate and evaluate the turmeric antiseptic herbal ointment from the local medicinal plants.

**Literature review:** An antiseptic ointment is used to destroy or inhibit the growth of bacteria, frequently bacterial infections are deeply seated; a base which has the capacity to either penetrate or dissolve & release the medication effectively is therefore desired. Ointments used for the emollient effect should be easy to apply, be non-greasy & effectively penetrate the skin. Formulation and Evaluation of herbal Ointment containing Neem and Turmeric extract :Even in areas where modern

medicine is available, the interest on herbal medicines and their utilization have been increasing rapidly in recent years. Plant derived substances and herbal medicines have recently attracted the great interest towards their versatile application, as medicinal plants are the richest source of bioactive compounds used in traditional and modern medicine. The present work is to formulate and evaluate the ointment of Neem (*Azadirachta indica*) and Turmeric (*Curcuma longa*) extract.

**Methods and Materials:**

Leaves of neem were collected from the local area of, dried rhizomes of turmeric collected and dried latex of aloe vera were purchased from local market 30gm of powder was placed into the thimble and placed in the soxhlet chamber. 500ml of 90% ethanol placed in round bottle flask and assembled for soxhlet extractor. After completed the extraction process, the solvent and extractor were placed in water bath evaporator. After evaporation we get the extract, blackish green colour extract was obtained.

Extracts of Plants	Extracts Combination no.					
	1	2	3	4	5	6
Aloe vera Extracts	1	1.2	1.5	2	2.5	3
Neem Extracts	1	1.2	1.5	2	2.5	3
Turmeric Extracts	1	1.2	1.5	2	2.5	3
Wool fat Extracts	0.5	1	2	3	3.5	4
Ceto stearyl alcohol Extracts	0.5	1	2	3	3.5	4
Hard paraffin Extracts	0.5	1	2	3	3.5	4
Yellow soft paraffin Extracts	0.5	1	2	3	3.5	4
Sandalwood oil	0.04	0.06	0.07	0.08	0.04	0.03



Extract of powder crude drug Final product of extraction aloe vera, turmeric, neem

**2. Ointment are prepared by four methods: A) Fusion method, B) Trituration Method, C) Chemical reaction method, D) Emulsification method**

**Fusion method:** Ointment was prepared by using fusion method. This method is prepared when the base is hard & the medicaments are soluble in the base. All the ingredients such as white soft paraffin, stearic acid are melted together. The medicament is then added to the melted base & stirred thoroughly until the melted base cools down & a homogenous product is formed.

**Procedure:**

Initially ointment base was prepared by weighing accurately. The fusion method is used for

making ointment. Grated hard paraffin which was placed in evaporating dish on water bath. After melting of hard paraffin remaining ingredients were added and stirred gently to aid melting and mixing homogeneously followed by cooling of ointment base. Herbal ointment was prepared by mixing accurately weighed Neem, turmeric and aloe vera extract to the ointment base by levigation method to prepare a smooth paste with 2 or 3 times its weight of base, gradually incorporating more base until to form homogeneous ointment. And also add sandalwood oil. This homogenous ointment finally transferred in a suitable container.

Stored in air-tight container and dark, cool place.

Zone of inhibition measured in 06 different extract ratio on *Staphylococcus aureus*,

Escherichia coli species were noted. These tests were carried out by cup plate method. These bacteria were selected for their potential to cause skin and wound infections.

Cup plate method was employed to evaluate the antibacterial efficacy of the extract combination. The diameter of the borer used was 6 millimeter. Then the minimum inhibitory concentration (MIC) of the effective combination was found out. To find MIC, double strength broth, 50% extract solution, sterilized distilled water were taken in different ratio to obtain the final concentration 0%, 5%, 10%, 15%, 20% and 25%. The effective concentration was checked by observing the solution when it showed turbidity. In case of colored test solutions visual observation is not possible. So, the mixture solution was swabbed in suitable media and incubated at 37°C for 48 hours. MIC was indicated by the concentration at which there was no growth

The formulated ointment was evaluated by using the parameters like: spreadability, irritant effect, diffusion, and physical stability. Spreadability test was performed by applying the ointment on the skin and noticing whether spreading was good or not. For the irritancy test, the ointment was applied to the normal and broken skin of human beings. Diffusion test was carried out by the cup plate method and the final product was compared with branded marketed products. Finally, the physical stability test of the final product was carried out at various temperatures i.e. at 2<sup>o</sup>C, 25<sup>o</sup>C and 37<sup>o</sup>C for four weeks.

## II. RESULTS AND DISCUSSION:

Zone of inhibition given by the 06 different combination ratio (Table 1) were noted and the result obtained is as follows:

**Table 2: Zone of inhibition of the combined extract of plants**

Extract combination no.	Staphylococcus aureus	Escherichia coli
1	1 cm	1 cm
2	4cm	2cm
3	3 cm	2.5cm
4	4.2 cm	3.5 cm
5	5 cm	4 cm
6	6.1 cm	5.5 cm

Of the 06 different combinations tried, the combination number 5 was selected as the most effective combination based on the antimicrobial efficacy [Table 2].

Different formulations of ointment bases were considered for optimum desirable characteristics like: compatibility with extracts, penetration, spreadability, and irritant effects. In the formulation, sandalwood oil also acts as flavoring agent. After the completion of the formulation, quality of the ointment was checked in terms of irritancy, spreadability, diffusion and stability.

When the ointment was applied to the normal and broken skin, it showed no irritant effect but a slight burning sensation was caused in open wounds. The burning sensation was due to the eucalyptus oil used in the formulation. The ointment readily spread when applied on the skin topically and rubbed gently. The product well diffused in the media around the cup of agar media and the diffusion of the product was comparable to similar marketed ointment of reputed brands.

Similarly, the ointment was found to be physically stable at different temperatures i.e. 2<sup>o</sup>C, 25<sup>o</sup>C and 37<sup>o</sup>C within a test period of four weeks. There were no changes in the spreadability, diffusion and irritant effect even after the exposure to different temperatures.

## III. CONCLUSION:

The purpose of the study was to prepare antimicrobial herbal ointment using locally available plants. On the basis of antimicrobial efficacy, five different local plants were taken and their ethanolic extracts were incorporated in the most effective ratio in appropriate base. The final product readily spread on skin surface, showed no irritant effect, diffused well and was stable at different temperatures.

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