



# Formulation And Evaluation Of Polyherbal Ointment

Name : Kiran D. Kurhade\*, Prof .Rahul S. Mohan , Saurabh R. Kharat Dr. Rajendra M. Kawade

Nandkumar Shinde College Of Pharmacy , Aghoor , Vaijapur .Pin :423701 Dist:Ch.Sambhajinagar

## ABSTRACT:

Herbal therapy and herbal drugs predominates in traditional medicine as well as in alternative medicine practiced in the developed world. Among the various indications where traditional herbal medicines are used, skin and skin related disorders is ranked top. Thus, the main objective of the present study isto formulate and evaluate a poly herbal ointment with antiseptic activity. 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 herbal ointment containing Neem (*Azadirachta indica*) and Turmeric (*Curcuma longa*) extract. The ethanolic extracts were prepared by using maceration method. The ointment base was prepared and formulation of herbal ointment was done by incorporating the extract in the base by levigation method. After completion of formulation it was evaluated for its physicochemical parameters like colour, odour, pH, spreadability, extrudability, consistency, solubility, washability. Also the formulation was evaluated for its stability at various temperature conditions which shows no change in the irritancy, spreadability. Thus, it could become a media to use the medicinal properties of Neem and Turmeric effectively and easily as a simple dosage form.

Keywords: Maceration, Levigation, Extrudability, Spreadability.

## INTRODUCTION :

Ayurvedic medicine is a time-tested system of medicine which has been in clinical use for centuries in India. Being a time-tested system, it has an edge over other existing systems of health management. When two or more herbs are used in formulations, they are known as polyherbal formulations. Ayurveda and herbal medicine has roots in medicinal herbs and they have been practiced for centuries. Herbal medicine is making dramatic comeback and increasing number of patients are visiting alternative medicine clinics. Side effects of synthetic medicine are alarming and recent time has seen risk of herbal and herbal-synthetic drug interactions. In India, from ancient times, different parts of medicinal plants have been used to cure specific ailments. Today, there is widespread interest in drugs derived from plants. This interest primarily stems from the belief that green medicine is safe and dependable, compared with costly synthetic drugs that have adverse effects. Natural antimicrobials can be derived from plants, animal tissues, or microorganisms. The shortcomings of the drugs available today, propel the discovery of new pharmacotherapeutic agents in medicinal plants. To determine the potential and promote the use of herbal medicine.

The *Azadirachta indica* is a fast growing ever green popular tree found commonly in India, Africa and America. It

has been used in ayurvedic medicine for more than 4000 years due to its medicinal properties. Neem is called 'arista' in Sanskrit a word that means 'perfect, complete and imperishable'. Arishtha is the Sanskrit name of the neem tree meaning 'reliever of sickness and hence considered as a 'Sarbarogaribarini'. The importance of neem tree has been recognised by US National Academy of Sciences, which publish a report in 1992 entitled 'Neem- a tree for solving global problem.1,2

Benefits of Neem:

- Antioxidant Activity
- Anti Cancerous Activity
- Anti-Inflammatory Effect of Neem
- Anti Viral Activity
- Anti Bacterial Activity
- Anti Fungal Activity

### **TURMERIC (*Curcuma longa*)**

Turmeric (*Curcuma longa* L.), belonging to the Zingiberaceae family, has been traditionally used as a medicinal herb, dietary spice, food source, food preservative, and a coloring agent in many Asian countries. *C. longa* L. is a perennial plant with a short stem and large leaves that bears ovate, pyriform, or oblong rhizomes that are brownish-yellow colored and branched.4 Turmeric is a mild digestive, being aromatic, a stimulant and carminative. Turmeric is one of nature's most powerful healers. The active ingredient in turmeric is curcumin. Turmeric has been used for over 2500 years in Indian, where it was most likely first used as a dye. Turmeric water is an Asian cosmetic applied to impart a golden glow to the complexion. Curcumin has been shown to be active against *Staphylococcus aureus* (pus-producing infection). Anemia, cancer, diabetes, digestion, food poisoning, gallstone, indigestion, IBS, parasites, poor circulation and wounds. Turmeric decreases Kapha and so is used to remove mucous in the throat watery discharges like leucorrhea, and any pus in the eyes, ears, or in wounds, etc.5

### **Uses of Turmeric**

Since ancient times, turmeric has been used as a traditional medicine and for beauty care. In Ayurvedic system of Indian medicine, turmeric is an important herbal medicine prescribed for various diseases. Infact, turmeric is even used in modern times to plug radiator leaks in water-cooled radiators.

The various uses of turmeric are as follows:5

### **Food Additive**

Turmeric is used in products that are packaged to protect them from sunlight.

- Turmeric also forms a substitute for mustard in the cattle feed
- Turmeric is a mild aromatic stimulant used in the manufacturing of curry powders.
- Sometimes in pickles and mustard, turmeric is used to compensate for fading.
- The curcumin solution or curcumin powder dissolved in alcohol is used for water containing products.

### **Medicinal**

- Turmeric is used for treating digestive disorders.

- Raw Turmeric juice is used to treat hyper acidity and indigestion.
- Curcumin also has an anti-inflammatory effect by reducing histamine ( hormone ) levels.
- The fluoride present in turmeric is essential for teeth.
  - Curcumin an active component of turmeric, has anti oxidant properties and so turmeric is used alternative medicine.

### **Cosmetic**

- Regular turmeric use is said to make the skin fair, soft and smooth.
  - Raw turmeric juice is applied to the skin as a paste, kept for around thirty minutes and then washed off. It adds glow to the skin.
- It is believed that regular bathing in water containing turmeric reduces growth of body hair.
  - It is an essential ingredient of the traditional bathing ritual of Indian marriages where it is applied along with sandal wood paste before the bath.

### **Tulsi :**

Tulsi, also known as Holy Basil or *Ocimum sanctum* (OS), is an important healing plant in alternative medicines in India and Southeast Asia. Tulsi contains compounds that can help with the following skin concerns:

**Brightening:** Tulsi can help brighten skin and give it a youthful glow.

**Dark spots:** Tulsi can help lighten dark spots, hyperpigmentation, and other discoloration.

**Free radical damage:** Tulsi contains antioxidants that can help protect skin from damage caused by pollution, sun damage, acne, and pimples.

**Cleansing:** Tulsi can help cleanse skin and remove dirt, impurities, pollutants, and excess oil from pores. **Acne:**

Tulsi may be beneficial for acne due to its antibacterial properties.

**Eczema:** Tulsi may help with dry skin conditions like eczema due to its anti-inflammatory action

### **DRUG & EXCIPIENTS PROFILE:**

| SrNo | Name Of Ingredient | Image   | Active Constituent  | Uses  |
|------|--------------------|---|---|---|
| 1    | Neem extract       |    | Azadirachtin is the most important active constituent of neem (Azadirachta indica). Other active constituents include: nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin.            | It helps extract excess sebum from the skin and tightens the pore. It also soothes any itchiness and irritation brought by acne on the skin. So it is evident that you can get rid of zits using neem oil for pimples.  |
| 2    | Turmeric Extract   |   | Curcuminoids, which include curcumin, demethoxy curcumin, and bisdemethoxycurcumin, are the main pharmacological constituents of turmeric. Curcumin is a crystalline compound.  | Turmeric can help with acne, psoriasis, and other skin conditions. Turmeric's anti-inflammatory properties can help wounds heal faster by reducing inflammation and speeding up the skin's ability to form new tissue.  |
| 3    | Tulsi              |  | Eugenol: A volatile oil that's largely responsible for Tulsi's therapeutic potential<br>Ursolic acid: A triterpenoid<br>Rosmarinic acid<br>Caryophyllene<br>Oleanolic acid<br>Carotenoids<br>Vitamin C<br>Calcium, Iron, Zinc | Tulsi can help cure fever. Tulsi leaves are used to treat skin problems like acne, blackheads and premature ageing. Tulsi is used to treat insect bites. Tulsi is also used to treat heart disease and fever. Tulsi is also used to treat respiratory problems. |

## MATERIAL AND METHOD:

### Collection of plant material

The *Azadirachta indica* A. Juss leaves were collected from in and around Perambalur. Dried rhizomes of turmeric were collected from in and around Perambalur. These are authenticated by botanist, department of botany, national college, Trichy. Then the leaves cleaned properly and shade dried at room temperature.

### Preparation of Neem Extract

Leaves of the plant were collected and washed thoroughly with distilled water and shade dried for 10 days. Dried leaves were ground into powder form. 100gm powder was imbibed with 350ml of 90% ethanol for 3hrs. and transferred to percolator with addition of 150ml of 90% ethanol for maceration for 7 days with occasional stirring. Finally, ethanolic extract was collected and concentrated to get blackish green residue. The extract was stored in the airtight container at cool and dark place.<sup>6</sup>

### Preparation of Turmeric extract

Dried rhizomes of turmeric were ground and the powder obtained was followed for extraction same as that for neem leaves extract. The extract with crimson red colour was obtained and stored at cool and dark place in air tight container.

### Preparation of tulsi extract:

Separate the tulsi leaves from the stem Wash the leaves in clean water Dry the leaves for 7 days until they are ready to be ground Powder the dried leaves in an electric grinder until a uniform powder is obtained Macerate 250 grams of the powdered tulsi with 100% ethanol for 3 days

**Table 1 :Formation of ointment bases-**

| Sr. no. | Name of Ingredients  | Quantity to be taken |
|---------|----------------------|----------------------|
| 1       | Wool fat             | 0.5                  |
| 2       | Cetostearyl alcohol  | 0.5                  |
| 3       | Hard paraffin        | 0.5                  |
| 3       | Yellow soft paraffin | 8.5                  |
| 4       | Distilled water      | q.s                  |

**Table 2 : Formulation of herbal ointment -**

| Name of ingredient        | F1      | F2      | F3      |
|---------------------------|---------|---------|---------|
| Prepared neem extract     | 0.08gm  | 0.10gm  | 0.12gm  |
| Prepared turmeric extract | 0.08 gm | 0.10 gm | 0.12 gm |
| Prepared tulsi extract    | 0.18 gm | 0.10 gm | 0.12gm  |
| Ointment bases q.s        | 10 gm   | 10 gm   | 10 gm   |

**PROCEDURE :**

Required quantities of emulsifying wax, liquid paraffin and white soft paraffin were weighed and melted. To this, adequate quantities of methanolic extract of the mentioned four plants were added and stirred well until a homogeneous mass were obtained<sup>10</sup>. The compositions of different polyherbal ointment are listed in Table I.

- a) Initially ointment base was prepared by weighing accurately 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.
- b) Herbal ointment was prepared by mixing accurately weighed Neem and Turmeric extract to the ointment base by levigation method to prepare a smooth paste with two or three times its weight of base, gradually incorporating more base until to form homogeneous ointment, finally transferred in a suitable container.

**Evaluation test:****1) Physicochemical parameters:**

Preliminary evaluation of formulations at different concentrations was carried out as follows:

**a) Colour and odour:**

Colour and odour was examined by visual examination. Loss on drying was determined by placing ointment in petridish on water bath and dried for 105°C.

**b) pH:**

The pH of various formulations was determined by using Digital pH meter. One gram of ointment was dissolved in 100 ml of distilled water and stored for two hours.

- c) **Spreadability** : is a term expressed to denote the extent of area to which the ointments readily spreads on application to skin or affected part. A special apparatus has been designed by Multimer to study the spreadability of formulations. The spread ability was expressed in terms of times in seconds taken by two slides to slip off from ointment and placed in between the slides under the direction of certain load. Lesser the time taken for separation of two slides, result the better spread ability. Spread ability was calculated by using the formula.

$$S = (M.L/T)$$

Where, S = Spreadability,

M = Weight tied to upper slide,

L = Length of glass slides and T = Time taken to separate the slides.

#### d) Extrudability :

A simple method was adopted for this study. The formulations were filled in the collapsible tubes after the ointments were set in the container. The extrudability of the different ointment formulations was determined in terms of weight in grams required to extrude a 0.5 cm of ribbon of ointment in 10 second.

e) **Diffusion study:** The diffusion study was carried out by preparing agar nutrient medium of any Concentration. It was poured into petridish. A hole bored at the centre and ointment was placed in it. The time taken for the ointment to get diffused was noted.

#### f) Stability study:

The stability studies were carried out for the prepared formulations at different temperature conditions (40C, 25o C and 37o C) for 3 months.

#### Result:

Literatures revealed that the selected four herbs *Azadirachta indica*, *Mimosa pudica*, *Chromolaena odorata*, *Samadera indica* have antioxidant and antibacterial activity. Hence an attempt was made to formulate a polyherbal ointment, and to evaluate for its physical parameter, in vitro antioxidant activity and to compare its antibacterial activity with a marketed formulation (5% w/w Betadine). Extraction and the phytochemical screening was done using methanol as the solvent. Phytochemical screening confirmed the presence of various phytoconstituent activity of prepared ointments were compared with 5%w/w Betadine ointment using selected species of microorganism such as *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Bacillus sp* and it showed that formulations like F2 and F3 showed greater activity *Staphylococcus aureus* and *Bacillus sp* compared to 5% Betadine. So, antimicrobial study shows that the prepared ointments has better activity against *Staphylococcus aureus* and *Bacillus sp* compared to standard 5% Betadine ointment. Anti oxidant activity inferred that the formulated ointments showed similar activity as that of standard ascorbic acid and hence revealed that this activity is due to the presence of flavanoids and tannins. Hence the study concludes that an efficient antiseptic ointment with antimicrobial and antioxidant activities can be formulated from the methanolic plant extracts of *Azadirachta indica*, *Mimosa pudica*, *Chromolaena odorata*, *Samadera indica* which can also be used for wound healing and various skin infections.

#### Conclusion:

Polyherbal formulations are effective for wound healing A systematic research found that polyherbal formulations can promote wound healing and that combining traditional therapies with clinical therapies can help develop new wound-healing products. Consumers prefer natural cosmetics One study found that consumers prefer natural cosmetics to avoid side effects and recommended further research on formulations with other herbal sources for skin benefits. Polyherbal products can be stable and pass microbiological tests One study found that a polyherbal product for burn healing was stable to physical changes and passed microbiological tests. The study also found that the product exhibited plastic behavior, which is favorable for a topical burn product

**REFERENCE :**

1. BHU ; A Patent Polyherbal Formulation to Prevent Atherosclerosis.
2. [www.ayurlifestyle.com](http://www.ayurlifestyle.com).
3. Nihal Singh Verma, Sumeet Dwivedi, Debadash Panigrahi and S.K. Gupta (2011). Anti-bacterial activity of root bark of *Nyctanthes arbor-tristis* Linn., *International Journal of Drug Discovery and Herbal Research*, 1(2)April-June:61-62.
4. Abhijeet Pandey, Jui V. Jagtap, Aditi A. Patil, Richa N. Joshi and B. S. Kuchekar (2010). Formulation and evaluation of anti-bacterial and anti-fungal activity of a herbal ointment containing *Aloe-vera*, *Azadirachta indica* and *Curcuma longa*, *Journal of Chemical and Pharmaceutical Research*, 2(3):182- 186.
5. Sadia Afreen Chowdhury et al. Cytotoxicity, Antimicrobial and antioxidant studies of the different plant parts of *Mimosa Pudica*, *J. Pharm. Sci.* 1(1&2): 80-84.
6. Shubhangi E. Sawant, Monali D. Tajane, Formulation and evaluation of herbal ointment containing *Neem* and *Turmeric* extract, *Journal of Scientific and Innovative Research* 2016; 5(4): 149-151.
7. Biswas Kausik, Chattopadhyay, Ishita, Banerjee K Ranajit and Bandyopadhyay Uday, Biological activities and medicinal properties of *Neem (Azadirachta indica)*, *Current Science*, 2002;82(10):1336-1345.
8. Rudra Prasad Giri, Dr. Ajit. K. Gangawane, Dr. Sucheta Ghorai Giri, *Neem the wonder herb: A short review*, *International Journal of Trend in Scientific Research and Development*, 2019;3(3):962-967: DOI:10.31142/ijtsrd23038
9. Sera kim, Seok- Chun ko, Yoon-Sook kim, Sang-keun Ha, Ho-Young Park, Yongkon Park, and Sang-Hoon Lee, "Determination of *Curcuma longa* L. (*Turmeric*) leaf extraction conditions using response surface methodology to optimize extraction yield and antioxidant content" *Hindawi, journal of Food Quality*.
10. Negar Jamshidi and Marc M. Cohen; The clinical efficacy and safety of *tulsi* in Page | 45
11. Abhijeet Pandey\*, Jui V. Jagtap, Aditi A. Patil, Richa N. Joshi and B. S. Kuchekar Department of Pharmaceutics, MAEER's Maharashtra Institute of Pharmacy, Kothrud, Pune, MS, India
12. Rajasree P.H1\*, Jessen George2, Gritta Sebastian1, Gowda D.V1 1Department of Pharmaceutics, JSS College of Pharmacy, Mysore, Karnataka, India-570015 2Department of Water and Health, Faculty of Life Sciences, JSS University, SS Nagar, Mysore, Karnataka, India .
13. Susan J. Hewlings and Douglas S. Kalman
14. Sharma Pankaj1, Tomar Lokeshwar1\*, Bachwani Mukesh1, Bansal Vishnu 2.1 Department of Pharmaceutical Chemistry, School of Pharmaceutical Sciences, Jaipur National University, Jaipur, Rajasthan, India 2Maharishi Arvind College of Pharmacy, Mansarovar, Jaipur, Rajasthan, India
15. Subapriya, R; Bahini, S. *Current medicinal chemistry\_ Anti\_Cancer Agent*, volume 5, Number 2, 20p5, pp.149-156(8).
16. KP Sampath kumar, Debjit Bhosale milk, Biswajit, Chiranjib, Pankaj and KK tripathi Margret chandrahumans: A systematic review of the literature. Evidence-based complementary.
- 17) Ms.Maryam Mulla. Sana Attar, Ms. Nazneen Nithore, Ms. Reeba Parkar. Formulation and evaluation of herbal ointment containing *Neem* and *Karanj* oil, *International journal of creative research thoughts (IJCRT)*; 2022;10(5):200-205.
- 18) . Ashwinder Singh and Vasudeva Rao Avupat, Development and Validation of UV Spectrophotometric method for the Estimation of *Curcumin* in Standardised Polyherbal Formulations, *J Young Pharm*, 2017; 9(4):491-

495.

19. Dr. Tribhuvan Singh, Syed Imran U1 Haq, Shaik Mohammed Salman, Afifa Namreen, Anas Rasheed, International Journal of Applied Pharmaceutical Sciences and Research 2017;2(4):99-106.

20) Rajasree PH, Viswanad V. Formulation and evaluation of antiseptic activity of polyherbal ointment/Int J Pharm Life Sci. 2012;3(10):2021-2031.

