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**Rajnandan Borah**

Student, Department of  
Pharmacognosy, Himalayan  
Pharmacy Institute, Sikkim,  
India

**Mrittunjoy Adhikari**

Student, Department of  
Pharmacognosy, Himalayan  
Pharmacy Institute, Sikkim,  
India

**Melina Subba**

Student, Department of  
Pharmacognosy, Himalayan  
Pharmacy Institute, Sikkim,  
India

**Chandrika Sharma**

Assistant Professor, Department  
of Pharmacognosy, Himalayan  
Pharmacy Institute, Sikkim,  
India

## Formulation and evaluation of polyherbal ointment by using orange peel, lemon grass, turmeric and *Aloe vera*

**Rajnandan Borah, Mrittunjoy Adhikari, Melina Subba and Chandrika Sharma**

**Abstract**

**Background:** Currently market is flooded with synthetic skin care lotion which contains.

**Method:** The present work was aimed to formulate poly herbal ointment by using *Curcuma longa*, *Cymbopogon citratus*, *Citrus aurantium dulcis* extract and glycerine, liquid paraffin and ointment base (Emulsifying wax, Cetostearyl Alcohol, White soft paraffin, Wolf fat, Sodium lauryl sulfate, Methyl paraben) as additives.

After formulation, it was evaluated & various parameters such as- organoleptic properties (Colour, odour, appearance) & physicochemical parameters (P<sup>H</sup>, consistency, spreadability, solubility, non-irritancy, wash ability, centrifugation, viscosity, loss on drying) were determined and reported.

**Results:** Results showed that, different evaluation parameters of prepared Polyherbal ointment were resembled with standard values and with marketed formulation.

**Conclusion:** Now-a-days consumers more prefer natural based cosmetics to avoid unnecessary side effects. Further research is appreciated for Formulation with other herbal sources for skin benefits.

**Keywords:** *Curcuma longa*, *Cymbopogon citratus*, *Citrus aurantium dulcis*, cetostearyl alcohol, polyherbal ointment

**Introduction**

The herbal ointments refer a viscous semisolid preparation containing any plant's seeds, berries, roots, leaves, bark or flowers for the topical use on a variety of body surfaces.

The most active compound of Turmeric is curcumin which has many scientifically proven health benefits, such as the potential to improve heart health and prevent against Alzheimer's and cancer. It's a potent anti-inflammatory and antioxidant. It may also help improve symptoms of depression and arthritis.

The *Cymbopogon citratus* is rich in fiber, vitamin C, folate, vitamin B6, calcium and other essential nutrients. The skin of the oranges contains a good number of polyphenols that protect against several diseases. Peels have anti-cancerous properties, due to the presence of limonene, a naturally occurring chemical.

The *Citrus aurantium dulcis* is a rich source of flavonoids and phenolic compounds, which contain antioxidants. It's also an effective antibacterial and antifungal agent that contains anti-inflammatory and antioxidant properties. Lemongrass contains quercetin, a flavonoid known for having antioxidant and anti-inflammatory benefits.

When used on your skin, *Aloe vera* has shown to be safe. For sunburns, mild cases of frostbite, cold sores, and psoriasis, aloe may relieve some of your pain and promote healing. *Aloe vera* contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids. Vitamins: It contains vitamins A (beta-carotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline.

**Materials and methods****Materials**

Oranges were taken from the market of Rangpo, Sikkim, Turmeric, Lemon grass and *Aloe vera* were taken from the native place of Majhitar, Sikkim and other compounds like glycerine, liquid paraffin and ointment base (Emulsifying wax, Cetostearyl Alcohol, White soft paraffin, Wolf fat, Sodium lauryl sulfate, Methyl paraben) were collected from Himalayan Pharmacy Institute, Sikkim.

**Corresponding Author:****Chandrika Sharma**

Assistant Professor, Department  
of Pharmacognosy, Himalayan  
Pharmacy Institute, Sikkim,  
India

**Fig 1:** Turmeric**Fig 2:** Aloe vera gel**Fig 3:** Orange peel**Fig 4:** Aloe vera extract**Fig 5:** Orange peel extract**Fig 6:** Turmeric extract

## Methods

### Filtration of Turmeric extract

The 40gm of powdered turmeric was weighed and added in the beaker to it 350ml of distilled water was added for maceration for 7days with occasional stirring. And then the mixture was filtered using filter paper and also by the help of vacuum filtration. The filtrate was collected in china dish and kept in water bath until a concentrated crimson red colour was obtained and the extract was stored in desiccator <sup>[8]</sup>.

### Filtration of Orange peel

The orange peel was separated from the orange and cut into smaller pieces for shade drying for 10 days. Then the peels were grounded into powder form. 35 gm of powdered orange peel was weighed and added in beaker to it 350ml of 90% ethanol was added for maceration for 7 days with occasional stirring. And then the mixture was filtered using filter paper. The filtrate was collected in china dish and kept in water bath until a concentrated blackish brown colour residue is obtained. The extract was stored in desiccator <sup>[8]</sup>.

## Formulation of Ointment

**Table 1:** Formulation of Ointment base

Sl. No.	Ingredients	Quantity
1.	Emulsifying wax	10 gm
2.	Cetostearyl Alcohol	8 gm
3.	White soft paraffin	15 gm
4.	Wolf fat	5 gm
5.	Sodium lauryl sulphate	4 gm
6.	Methyl paraben	8 gm

**Table 2:** Formulation of Herbal Ointment

Sl. No.	Ingredients	Quantity
1.	Prepared orange peel extract	0.5 gm
2.	Prepared turmeric extract	0.5 gm
3.	Ointment base	50 gm
4.	Aloe vera	4 ml
5.	Lemon grass oil	1 ml
6.	Glycerine	10 ml
7.	Liquid paraffin	8 ml

A. The ointment base was prepared by taking accurately weighted Emulsifying wax and Cetostearyl Alcohol which was placed in China dish on water bath. White soft paraffin, wolf fat, sodium lauryl sulphate and methyl paraben were added to the mixture and stirred until the ingredients are melted and then added the extract with continuous stirring.

B. Ointment was prepared by using the extract of orange peel extract, turmeric extract, *Aloe vera* extract and lemon grass oil.

## Results and discussion

### Results

- **Colour:** The colour of the formulation was observed pale yellow. (Fig.7)
- **Odour:** The odour was characteristic.

- **pH:** The pH of the formulation was found to be approx. 5 both in the pH paper. (Fig. 8)
- **Consistency:** The formulation was smooth. (Fig. 7)
- **Spreadability:** The spreadability was found to be 1.96. (Fig. 9)
- **Solubility:** The formulation was soluble in boiling water, miscible with alcohol, ether and chloroform. (Fig. 11)
- **Irritancy test:** The formulation was non-irritable & non allergic on the skin.
- **Wash ability:** The formulation was easily removed from the skin by using water.
- **Viscosity:** The viscosity of the formulation was found to be  $33.21 \pm 0.51$ .
- **Centrifugation:** Slight phase separation. (Fig. 10)
- **Loss on drying:** The LOD of the formulation was found to be 20-30%.



Fig 7: Determination of consistency



Fig 8: Checking the pH



Fig 9: Spreadability test

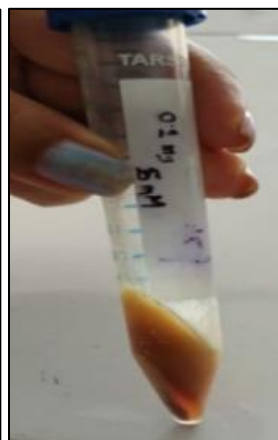


Fig 10: Centrifugation



Fig 11: Solubility in ethanol, chloroform & alcohol

### Discussion

The Poly herbal ointment containing Turmeric, Lemon grass and orange peel extract was formulated and for evaluation Organoleptic properties, Physicochemical Parameters were

being analysed. All the parameters shown results in acceptance range. Further this formulation can be compared with marketed one for better efficacy.

### Conclusion

Herbal ointments evaluation tests refer to studies & experiments undertaken during production & which occasionally ought to be undertaken post-production by regulatory agencies & researchers. In this study a formulation of herbal ointment was tested & evaluated in terms of their Organoleptic properties (appearance, colour, odour) & Physiological parameters (pH, spreadability, washability, irritancy test, viscosity, loss on drying, centrifugation, solubility). The results indicate the formulation met the requirements of the standards, which means they are chemically sound.

From the ancient times, it was observed that orange peel, turmeric, *aloe vera*, lemon grass is used for various medicinal properties like anti-bacterial, anti-microbial, anti-inflammatory, anti-oxidant, anti-septic, anti-fungal, etc. so this ointment could become a media for having such medicinal properties if further studies are carried out in depth analysis of this formulated herbal ointment.

#### Authors' contribution

RB designed the work; MS wrote the manuscript and MA formulated and evaluated the product. RB, MS and MA involved in formulating and evaluating the poly herbal skin care lotion. CS guided for the successful completion of the experiment.

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