



## Formulation and Evaluation of Pain relief Herbal roll on

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### ABSTRACT

A Roll-on is a type of liquid preparation packed in a container with an applicator consisting of a revolving ball at the top of the dispenser. Herbal roll-on contains the volatile oils used to treat different pains such as headaches, joint pains, neck aches, etc. It is also used in the treatment of cold and nasal congestion. It contains a mixture of volatile oils such as eucalyptus oil, camphor oil, thyme oil, lavender oil, rosemary oil, chamomile oil, menthol etc. These oils are generally used to treat stress, relieve pain, migraine, anti-inflammatory, treat anxiety, relieve sinus tensions, etc. This topical pain reliever containing all-natural ingredients causes a pleasing sensation helpful to counteract the pain.

**Keywords:** Roll on, herbal, volatile oils, Formulation, Evaluation, pain reliever.

### INTRODUCTION

Herbal roll-ons are the natural liquid preparation containing volatile oils used to relieve pain and stress. Pain is an irritating or unpleasant sensory or emotional sensation caused due to acute or potential tissue damage [1] and occurs with the involvement of many factors such as emotional, motivational, sensory discriminative and cognitive aspects[2]. These volatile oils are the essential oils that contain aromatic odor and can produce psychophysiological activities that can cause mental, spiritual, and physical healing[3]. These oils found in leaves, petals, stems, seeds, barks, roots, etc., are used to prepare pain-relieving formulations. The oils can be extracted by different methods such as effleurage, cold pressing, steam distillation, hydrodistillation, solvent extraction, hydro diffusion, carbon dioxide extraction, and microwave-assisted processing [4]. The quantity of

volatile oil depends upon the type of climatic condition such as altitude, temperature, humidity, rainfall, type of soil & soil fertility, harvesting technique & time and method of extraction[5]. These odoriferous principles chemically belong to two major groups: terpenes and aromatic compounds. Based on the presence of the functional group, they are further categorized into ketones, aldehydes, phenols, esters, alcohols, hydrocarbons, and ethers. [6-8]. The essential oils generally used to relieve pain are eucalyptus oil, rose oil, Bergamot essential oil, camphor oil, thyme oil, lavender oil, rosemary oil, chamomile oil, menthol, etc. [9].

### MATERIALS AND METHODS

**Required essential oils:** lavender oil 15ml (Organix Mantra), rosemary oil 15ml (Organix Mantra), chamomile oil 30ml (Naturalis Essence),

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eucalyptus oil 30ml (Naturalis Essence), camphor oil 30ml (Naturalis Essence), menthol/ peppermint oil 30ml (Naturalis Essence), thyme oil 10ml (Naturalis Essence) and base oil is white mineral oil 200 ml (loyal cosmetic grade). The biological source and purpose are shown in table no.1.

**Method of preparation:** The technique used to prepare herbal roll-on is a simple blending process. It involves the simple mixing of all the ingredients based on the formulation mentioned in table no.2.

**Table no 1: List of ingredients used in the preparations of Herbal Roll-on**

s.no.	Name of the essential oil	Biological source	Purpose/ uses	References
1.	Lavender oil	Flowers of <i>Lavandula angustifolia</i> belongs to the family Lamiaceae	lavender can help treat headaches, migraine and is used in aromatherapy.	[10]
2.	Rosemary oil	<i>Rosmarinus officinalis</i> belongs to family Lamiaceae	anti-inflammatory, analgesic (pain-relieving) and improves circulation.	[11]
3.	Chamomile oil	<i>Matricaria chamomilla</i> L. belongs to family Asteraceae	Chamomile relaxes the body and soothes muscles; it helps treat anxiety and insomnia, which are common causes of headaches.	[12]
4.	Eucalyptus oil	<i>Eucalyptus globulus</i> belongs to family Myrtaceae	Headaches are caused by sinus issues, oil will open up the nasal passages, clear the sinuses, and help relieve sinus tension that causes the headaches	[13]
5.	Camphor oil	<i>Cinnamomum camphora</i> belongs to family Lauraceae	help treat headaches, including migraine headaches.	[14]
6.	Menthol/ peppermint oil	<i>Mentha piperita</i> belongs to family labiatae	Used to temporarily <b>relieve</b> minor <b>pain</b> from arthritis, muscle strains, backaches	[15]
7.	Thyme oil	<i>Thymus vulgaris</i> L belongs to family Lamiaceae	antifungal, anti-inflammatory, and antibacterial properties	[16]

**Table no 2: Formulation for Herbal Roll-on:**

Ingredients	Quantity required
Lavender oil	7.5 %
Rosemary oil	7.5 %
Chamomile oil	7.5 %
Eucalyptus oil	17.5 %
Camphor oil	10 %
Menthol/ peppermint oil	5 %
Thyme oil	4 %
white mineral oil (as an inert base)	q.s upto 100ml

**Evaluation tests of herbal roll on[17]:**

**Organoleptic Evaluation:** the herbal roll-on was evaluated for its organoleptic properties such as color, odor, and texture.

**Homogeneity:** homogeneity can be tested by visual appearance and by touch.

**After feel:** emolliency, slipperiness and residue left after roll-on application is observed.

**Removal:** Roll-on is applied on the skin and removed by washing with tap water.

**Irritancy test:** Roll on is applied on the skin and checked for redness, edema, inflammation, and irritation.

**Test for microbial growth:** The Formulated roll-on was inoculated on the agar media plates by streak plate method and control was prepared by excluding the cream. The plates were placed into the incubator and incubated at 37°C for 24 hours. After the incubation period, plates were taken out and checked for microbial growth by comparing them with the control.

**pH Evaluation:** The pH of the 1% roll-on solution was measured using a digital pH meter (Beckman, Germany).

**Stability test:** Stability testing of the prepared roll-on was performed to keep the samples at accelerated temperature conditions. Different roll-on containers were kept at an accelerated temperature of 4°C, Room temperature and 47°C, respectively. The samples were evaluated for the physicochemical parameters, turbidity and homogeneity at 24 hr, 48 hr and 72 hrs, respectively.

## RESULTS AND DISCUSSION

After formulating the herbal roll-on, evaluation tests were done and compared with the marketed preparation (amrutanjan roll-on). The results are tabulated in a table no.3. Based on the results of evaluation studies, the herbal roll-on shows similar reports as per marketed preparation.

### Evaluation of herbal roll-on:

**Table no 3: Comparison of formulated Herbal Roll-on with marketed roll-on:**

S.no.	Evaluation parameters	Observed values	Marketed prep. (amrutanjan roll-on)
1.	Organoleptic Evaluation	Strongly aromatic	Strongly aromatic
2.	Homogeneity	Uniform distribution	Uniform distribution
3.	After feel	Cooling effect with counter-irritant effect	Cooling effect with more counter-irritant effect
4.	Removal	Easily removed	Easily removed
5.	Irritancy test	No any irritation	No any irritation
6.	Test for microbial growth	No microbial growth	No microbial growth
7.	pH Evaluation	6	6-7
8.	Stability test	More stable at room temperature	More stable at room temperature

## CONCLUSION

The main aim of formulated herbal roll-on was to relieve headache, joint pains, and neck pain and to treat cold and nasal congestion. It was concluded that herbal roll-on is prepared using natural essential oils, which show fewer or no side effects than various synthetic analgesics. Based on the evaluation studies, results against multiple parameters, as shown in table no.3, were

satisfactory for application to areas suffering from a painful sensation.

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## REFERENCES

1. Sarmiento-Neto JF et al. Analgesic Potential of Essential Oils. *Molecules* 2016; 21:20.
2. Merky LA et al. Predicting DNA duplex stability from the base sequence. *Biochemistry* 1986; 83: 3746–3750.
3. Sowndhararajan, K, Kim S. Influence of Fragrances on Human Psychophysiological Activity: With Special Reference to Human Electroencephalographic Response. *Sci Pharm.* 2016; 84: 724–751.
4. Hamid AA et al. Essential Oils: Its Medicinal and Pharmacological Uses. *Int. j. curr. res.* 2011; 3(2):86-98.
5. Pannizi L et al. Composition and antimicrobial properties of essential oils of four Mediterranean Lamiaceae. *J Ethnopharmacol.* 1993; 39: 167-170.

6. Ashour M., et al. Biochemistry of Terpenoids: Monoterpenes, Sesquiterpenes and Diterpenes. In Annual Plant Reviews: Biochemistry of Plant Secondary Metabolism. 2nd ed.; Wink, M., Ed.; Wiley–Blackwell: Oxford, UK; 2010; 40: 258–303.
7. Bakkali F et al. Biological effects of essential oils—A review. Food Chem. Toxicol 2008; 46: 446–475.
8. Llana Ruiz. C et al. In vitro toxicological Evaluation of essential oils and their main compounds used in active food packaging: A review. Food Chem Toxicol 2015; 81: 9–27.
9. Jose FSN et al. Analgesic Potential of Essential Oils. Molecules 2016; (1)21: 20.
10. Renata P, Krzysztof S. “Composition, biological properties and therapeutic effects of lavender (*Lavandula angustifolia* L.). A review. Herba pol 2014; 60 (2).
11. Francisco JGM. et al. “*Rosmarinus officinalis* L. (Rosemary): An Ancient Plant with Uses in Personal Healthcare and Cosmetics. *Cosmetics* 2020; 7: 77.
12. Ompal S. et al. Chamomile (*Matricaria chamomilla* L.): An overview”. *Pharmacogn Rev.* 2011; 5, 9.
13. Zhang J et al. Chemistry and bioactivity of Eucalyptus essential oils. *Allelopathy J* 2010; 25 (2): 313-330.
14. Caren D et al. Essential Oils of Camphor Tree (*Cinnamomum camphora* Nees & Eberm) Cultivated in Southern Brazil. *Braz. Arch. Biol. Technol* 1999; 1-5.
15. Alankar S. A Review on Peppermint Oil. *Asian J. Pharm. Clin. Res* 2009; 2(2).
16. Eqbal MAD. Medicinal and Functional Values of Thyme (*Thymus vulgaris* L.) *Herb. J. Appl. Biol. Biotechnol* 2017; 5(02): 17- 22.
17. Valarmathi S et al. Formulation and Evaluation of Herbal Face Cream. *Res J Pharm Technol* 2020; 13 (1): 216-218.