

FORMULATION AND EVALUATION HERBAL ROLL-ON USED IN HEADACHE

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Abstract: The Herbal roll-on is the natural semi-solid preparation containing volatile oils are used to relieve pain and stress. It also used in migraine pain, nasal congestion and Topical pain reliever. Herbal roll-on have a significant property due to their natural ingredients and potential therapeutic benefits. It is a type of semi-solid preparation stored in a container equipped with a rolling ball applicator and top of the dispenser. An Herbal roll-on contains mixture of natural ingredients of volatile oils such as a Ginger oil, Menthol oil, Lavender oil, Rosemary oil. In the ginger oil shows the anti-oxidant property. Additionally, the herbal extracts of Menthol oil shows strong analgesic property, Lavender oil shows the property of aromatherapy and rosemary oil anti-inflammatory property along with this natural ingredients. These method Herbal roll-on is formulated using emulsification method. The prepared all batches of Herbal roll-on. (F₁, F₂, F₃, F₄, F₅, F₆.) Which evaluated the parameter such as organoleptic test, homogeneity, after feel test, stability test, microbial growth test, pH test. The F₆ batch shows pleasant, texture, colour which is having uniformly spreadability and this batch shows no microbial contamination and shows safety and stability over time. Having pH 5.5. It concluded that herbal roll-on shows minimal or no side effects as compared to synthetic analgesic. So, batch concluded.

Keywords: Herbal Roll-On, Topical pain reliever, Menthol oil, Ginger oil, Rosemary oil, Lavender oil.

1. INTRODUCTION:

Introducing our revolutionary herbal roll-on, meticulously formulated to provide unparalleled relief from headaches and various pains. Crafted with a blend of potent essential oils renowned for their analgesic properties, each ingredient is carefully selected to deliver maximum efficacy. Lavender oil prized for its calming effects, gently soothes tension while menthol oil provides a cooling sensation to alleviate discomfort. Rosemary oil, with its anti-inflammatory properties, works synergistically to ease muscle tension and promote relaxation. Furthermore, the inclusion of Lavender oil offers additional relief, reducing inflammation and promoting a sense of tranquillity. Our herbal roll-on is not just a temporary fix but a holistic solution that addresses the root cause of pain, allowing you to experience long-lasting comfort and rejuvenation. Simply apply the roll-on to the affected area and let the natural goodness of these botanical oils work their magic. Say goodbye to headaches and pains, and embrace a life of wellness with our herbal roll-on.



Fig.1 Herbal Roll-on

Even in regions where modern medicine is prevalent, herbal roll-ons provide a natural solution for pain and stress relief. Pain, characterized by discomfort due to tissue damage, can be addressed by these liquid preparations containing volatile oils.^[1] While some of these oils have poisonous properties, when used in therapeutic doses

below their toxic levels, they can effectively alleviate pain. Pain perception involves various factors including emotions, motivation, sensory input, discrimination, and cognitive processes. [2] Herbal roll-ons, infused with volatile oils extracted from leaves, petals, stems, seeds, bark, and roots, are utilized to treat diverse pains such as headaches, colds, and nasal congestion. These oils, obtained through methods like cold pressing, steam distillation, and solvent extraction, emit aromatic odours that can induce psychological activities, contributing to mental, spiritual, and physical healing. [3-4] A blend of natural ingredients like camphor, lavender, rosemary, and menthol in these topical pain relievers provides a pleasant sensation, effectively counteracting pain.

The formulation process involved the selection of appropriate, essential oils, and herbal products, followed by their Homogeneity testing and optimization of concentrations. The formulated herbal roll-on composed of different oils, including menthol oil, Ginger oil and rosemary oil, combined with essential oils such as lavender. Additionally, herbal extracts of menthol oil show strong analgesic property. The evaluation of the herbal roll-on demonstrated favourable results in terms of pH compatibility with the skin, desirable spreadability for ease of application, and stability over time. Sensory evaluation indicated a pleasant aroma and non-greasy ointment texture, enhancing user experience. Furthermore, the roll-on exhibited promising analgesic, and stress relieving property.

Headaches are prevalent and among the most common symptoms of nervous system disorders. These headaches are often treated with essential oils, primarily belonging to two chemical groups: Terpenes and aromatic compounds, categorized further into ketones, aldehydes, phenols, and esters based on functional groups. [5-8] Camphor and lavender oils are commonly used to alleviate pain, with lavender oil also recognized for its stress-relieving properties, aiding in headache relief, anxiety reduction, relaxation promotion, and sleep improvement. Ginger can enhance pain relief and serve as a carrier for roll-ons. Menthol exhibits analgesic effects and relieves minor aches and pains, while clove oil possesses potent analgesic properties and improves blood circulation, particularly beneficial for tension headaches. Herbal Roll-on preparation are homogeneous, viscous, semi-solid formulations, typically thick and non-greasy, designed for topical application. Formulated with natural medicinal phytoconstituents, these ointments ensure patient compliance and are well-suited for effective pain relief. The ginger oil shows the antioxidant property. Additionally, the herbal extract of menthol oil shows strong analgesic property, lavender oil shows the property of aromatherapy and rosemary oil shows anti-inflammatory property. In the formulation of herbal roll-on it contains the camphor as a preservative and white soft paraffin as an emollient. These essential oils are very effective for relieve headache. These are also used in migraine, sinus headache, tension headache. There is no or minimal side effects as compared to synthetic analgesic. It provides suitable results to the skin. These roll on help reduce inflammation and improve blood circulation.

2. MATERIALS AND METHODS OF PREPARATION:

2.1 MATERIALS:

For the preparation herbal roll-on following materials is used. Herbal roll-on contain volatile oils used to treat different pains such as headache and muscle pain. It also used in the treatment of cold and nasal congestion.

1. Menthol Oil:

Biological Source: *Mentha piperita*.

Family: Labiatae

Uses: Analgesic

Chemical Constituents: Menthone, Menthol, Cineole, Methylene.



Fig.2 Menthol oil

2. Ginger Oil:

Biological Source: Zingiber officinale

Family: Zingiberaceae

Uses: Antioxidant

Chemical Constituents: α -Zingiberene, Sesquiphellandrene, γ -Curcumin.



Fig.3 Ginger oil

Rosemary Oil:

Biological Source: Rosmarinus officinalis

Family: Lamiaceae

Uses: Anti-inflammatory

Chemical Constituents: P-cymene, Linalol, Thymol, Eucalyptol.



Fig.4 Rosemary oil

3. Lavender Oil:

Biological Source: Lavandula Angustifolia.

Family: Lamiaceae

Uses: Aromatherapy

Chemical Constituents: Linalool, linalyl acetate, Lavendulol, Limonene.



Fig.5 Lavender oil

4. Camphor:

Biological Source: Cinnamomum Camphora

Family: Lauraceae

Uses: Preservative

Chemical Constituents: Camphor, Linalool, Cineole.



Fig.6 Camphor

5. White Soft Paraffin:Source: Petroleum Uses: Emollient

Chemical Constituents: Cetostearyl alcohol, Glycerol, Potassium Sorbate, Benzyl alcohol, Citric acid Monohydrate, Povidone.



Fig.7 White soft paraffin

2.2 METHODS AND PREPARATION Give information about all methods of preparation. It involves all the ingredients and quantities as specified in table no.1 in the preparation of herbal roll-on Emulsification method is used.

1. Levigation Method:

Most commonly used method for small scale manufacturing of ointment (Roll-on) it is used when base is soft and medicament is insoluble in base.

2. Fusion Method:

This method is suitable when base is solid, small scale-porcelain dish is placed on water bath. Large scale carried out in steam jacket.

3. Chemical reaction Method:

This method is based on chemical reaction between drug and ingredients soft the base. Result in elegant and stable product.

Emulsification Method :

In this method fats, oils and waxes are melted together on water bath. The aqueous solution added to melt based with continuous stirring until product cools down. Semi-solid ointment is prepared.

Procedure: The aqueous solution of heat stable water soluble compound heated at same temperature. Otherwise fats and waxes are immediately solidified. The aqueous solution added to melt based with continuous stirring until product cools down. Semi-solid preparation is prepared. An emulsifying agent is needed to make a stable ointment.

Sr. No.	Ingredients	Uses	Required quantity	F ₁	F ₂	F ₃	F ₄	F ₅	F ₆
1	Menthol oil	Analgesic	15ml	4ml	15 ml	10 ml	15 ml	15 ml	15 ml

2	Ginger oil	Antioxidant	10 ml	5ml	7.5 ml	7 ml	8 ml	7.5 ml	10 ml
3	Rosemary oil	Anti-inflammatory	2 ml	6ml	12.5 ml	3 ml	2 ml	5 ml	2 ml
4	Lavender oil	Aromatherapy	4 ml	7ml	5 ml	5 ml	4 ml	2.5 ml	4 ml
5	Camphor	Preservative	12 ml	8ml	5 ml	15 ml	12 ml	10 ml	12 ml
6	White soft paraffin	Emollient	Upto 50 ml	Upto 50 ml	Upto 50 ml	Upto 50 ml	Upto 50 ml	Upto 50 ml	Upto 50 ml

Table No.1 Formulation of Herbal Roll-on

3. EVALUATION TESTS OF HERBAL ROLL-ON:

3.1 Organoleptic evaluation of herbal roll on:

Organoleptic evaluation test standard for Herbal-roll on typically evaluating the product sensory characteristics such as appearance, colour, odour and texture. It also provides valuable information about sensory characteristics of product helping ensure quality standards, user satisfaction, and suitable use in pharmaceutical application.

3.2 Homogeneity test:

Homogeneity Test ensures that the active ingredient and excipient are uniformly distributed throughout the product. Product is uniform composition which is essential for maintaining quality, efficacy and safety. Homogeneity test plays a crucial role in ensuring the integrity and reliability of herbal roll on. Herbal Roll-on product uniform and consistent throughout it.

3.3 After feel test of herbal roll on:

After feel test of Herbal-roll on involved evaluating how the product feels on the skin after application. Herbal roll on absorb into skin and any initial sensation to subside. After Herbal-roll on product has been absorbed to assess the after feel sensation in the skin consider factors such as Absorption rate, Residue, and moisturization.

3.4 Stability test of herbal roll on:

Stability test of Herbal-roll on is crucial to ensure their quality, efficacy and safety. Stability studies based on different storage conditions that affect the factors such as Temperature, humidity and light. Temperature range such as room temperature (25-30°C). Hot temperature (45°C) and freezing temperatures (-1 to -5°C). Stability study maintains a balanced or steady state in the face of external disturbance. It also includes physical appearance study, chemical composition study and microbial growth.

3.5 pH test of herbal roll on:

Conduct the pH test of the Herbal-roll on product and compare it's to human skin pH (5.4- 5.9). The main aim of this test desired pH level ensure product stability and safety ensure that Herbal roll-on does not cause any irritation, allergic reaction on skin. The samples are properly labelled and representative different batch. Compare pH value obtain acceptable pH range specified for Herbal roll-on product.

4. RESULTS:

4.1 Organoleptic evaluation and Homogeneity Test:

The organoleptic parameter of the prepared herbal roll-on where determined parameters such as colour, odour, texture. The formulation of Herbal roll-on is good appearance and batch F₆ is finalized and this is acceptable. The homogeneity test is useful for the skin parameter. In which ointment is easily absorbed in skin. So, the batch F₆ is approved. The homogeneity test is used to check the roll-on is uniformly spread in the skin. So the batch F₆ is approved.



Fig.8 Organoleptic evaluation

Sr. No.	Batches	Colour	Odour	Texture	Homogeneity
1	F ₁	Yellow	Pleasant	Solid	Uniformly Dispersed
2	F ₂	White	Pleasant	Ointment	Uniformly Dispersed
3	F ₃	Yellow	Pleasant	Ointment	Uniformly Spread
4	F ₄	White	Pleasant	Ointment	Uniformly dispread
5	F ₅	Yellow	Pleasant	Ointment	Uniformly Spread
6	F ₆	Pale Yellow	Pleasant	Ointment	Uniformly Spread

Table No.2 Organoleptic Evaluation and Homogeneity

4.2 After feel Test:

After feel test of Herbal roll-on involved evaluating how the product feels on the skin after application. Herbal roll on absorb into skin and any initial sensation to subside. So, batch F₆ is approved.

Sr. No.	Batches	Results
1	F ₁	Skin irritancy
2	F ₂	Mild skin irritancy
3	F ₃	Skin irritancy
4	F ₄	Skin irritancy
5	F ₅	Show less irritancy and gives Mild colling effect
6	F ₆	Colling effect

Table No.3 After feels test

4.3 Stability test of herbal roll-on:

In the preparation of Herbal roll-on the formulation is stable for the condition it contains the room temperature. Hot temperature and cold temperature. Then the Herbal Roll-on is stable for the room temperature and this is acceptable. So, the batch F₆ is acceptable.

Sr. No.	Batches	Temperature		
		Freezing Temp -1 to -5 °C	Room Temp 25-30°C	Hot Temp 45°C
1.	F ₁	Stable	More Stable	Less Stable
2.	F ₂	Stable	More Stable	Stable
3.	F ₃	Stable	More Stable	Stable
4.	F ₄	Stable	More Stable	Stable
5.	F ₅	Stable	More Stable	Stable
6.	F ₆	Stable	More Stable	Stable

Table No.4 Stability test

4.4 pH Test of Herbal Roll-on:

In the Herbal roll-on pH is used for the main parameter is pH. The skin pH is 5.4 -5.9. The batch F₁ shows pH is 6.11, batch F₂ shows 5.16, batch F₃ shows pH is 5.9, Batch F₄ showpH is 5.10, Batch F₅ shows pH is 5.8, and batch F₆ shows pH is 5.5. Batch F₆ shows results in range near about skin pH. Hence it is more acceptable.

Fig.9 pH test



After performing all evaluation tests we have concluded that batch F₆ is optimized batch andshows results in acceptable range as shown in table no.5 given below.

Sr. no.	Evaluation Parameters	Results
1	Organoleptic test	Strongly aromatic
2	Homogeneity test	Uniformly distributed
3	After feel test	Cooling effect
4	Stability test	More stable at room temp.
5	Microbial test	No microbial growth
6	pH test	5.5

TableNo.5 Result of evaluation of Herbal Roll-on

SUMMARY:

An Herbal Roll-on a type of semisolid preparation packed in container with an applicator consisting a revolving

ball at the top of the dispenser. Herbal Roll-on contain the different volatile oils used to treat different pain such as headache, Muscle pain. It also used in treatment of cold and nasal congestion. This Formulation contain mixture of volatile oils such as menthol oil, rosemary oil, and lavender oil etc. these oil are generally used to treat stress relieve pain, migraine, treat anxiety relieve sinus tension. An Herbal Roll-on topical pain reliever containing all natural ingredient cause pleasing sensation helpful to counteract the pain. The might touch on factors like price, availability and overall coustom satisfaction.

CONCLUSION: The main aim of this research was relieve headaches, common cold and nasal congestion. Itis concluded that Herbal Roll-on containing Menthol oil, Ginger oil, Lavender oil, Rosemary oil, camphor, white soft paraffin which shows minimal or no side effects and gives better relieving activity. The conclusion of an Herbal roll-on product review would typically summarize it's the effectiveness, scent, ease of use, and overall satisfaction. So, the batch F₀is acceptable because it provides suitable results to the skin.

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