

“Formulation And Evaluation Of Herabal Analgesic Oil”

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ABSTRACT:

Pain and inflammation are common clinical conditions that affect the quality of life of individuals worldwide. Conventional analgesic drugs such as Diclofenac and Ibuprofen are widely used but are associated with several adverse effects on prolonged use. This has led to increasing interest in the development of herbal formulations that are safer, cost-effective, and have minimal side effects.

The present study aims to formulate and evaluate a herbal analgesic oil using natural ingredients possessing analgesic and anti-inflammatory properties. The formulation primarily includes oils derived from *Eucalyptus globulus*, *Syzygium aromaticum*, and *Sesamum indicum*. Eucalyptus oil contains eucalyptol, which provides anti-inflammatory action, while clove oil is rich in eugenol, a potent natural analgesic. Sesame oil acts as a base and enhances the penetration of active constituents through the skin.

The herbal oil was prepared by appropriate extraction and blending techniques and evaluated for various parameters such as physical appearance, pH, viscosity, spreadability, and stability. The formulation is intended for topical application to relieve pain associated with muscle strain, joint disorders, arthritis, and minor injuries.

KEY WORDS: Analgesic oil, pain and inflammation reduce, joint disorders.

Introduction:

Pain is an unpleasant sensory and emotional experience associated with tissue damage or inflammation. It is one of the most common reasons for seeking medical treatment. Conventional analgesics like Diclofenac and Ibuprofen are effective but may cause side effects such as gastric irritation, ulcers, and kidney damage when used for a long duration.

Herbal medicine, especially in systems like Ayurveda, has been used since ancient times for the treatment of pain and inflammation. Medicinal plants contain active constituents such as alkaloids, flavonoids, tannins, and essential oils that provide therapeutic effects with fewer side effects.

In this project, herbal ingredients such as *Eucalyptus globulus*, *Syzygium aromaticum*, and *Sesamum indicum* are used. These plants possess analgesic and anti-inflammatory properties. Eucalyptus oil provides cooling and pain relief, clove oil acts as a natural analgesic due to eugenol, and sesame oil serves as a base that enhances skin penetration.

The aim of this study is to formulate and evaluate a herbal analgesic oil that is safe, effective, and economical, providing relief from pain associated with muscles, joints, and inflammation.

The results are expected to demonstrate that the formulated herbal analgesic oil is effective, stable, and safe for use, offering a natural alternative to synthetic analgesic preparations. This study supports the growing demand for herbal medicine

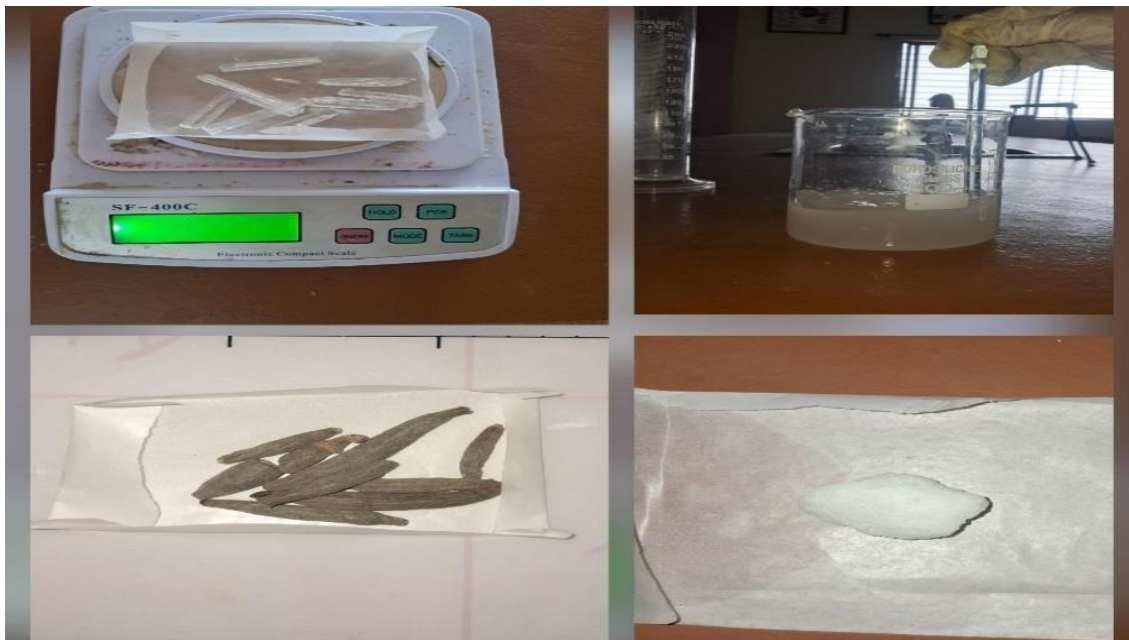
Method of Preparation

Cleaning of Apparatus



- All glassware such as beakers, measuring cylinders, and stirrers are properly cleaned and dried to avoid contamination.
- ♦ Importance of Cleaning
- Prevents contamination between experiments
- Ensures accuracy and reproducibility of results
- Removes chemical residues that may react in future experiments
- Maintains hygiene and increases lifespan of apparatus

2 : Weighing and Measurement of Ingredients



- Accurately weigh and measure all ingredients (sesame oil, essential oils, herbal extracts, camphor, menthol, etc.) using a digital balance and measuring cylinder

3 : Preparation of Base Oil



- Take the required quantity of sesame oil in a clean beaker. This acts as the carrier/base for the formulation.

4 : Heating of Base Oil:



Heat the sesame oil using a water bath at a controlled temperature of 40–50°C. Avoid direct heating to

5 : Addition of Herbal Extracts

Add turmeric extract and ginger extract slowly into the warm oil with continuous stirring. Continue heating for 10–15 minutes to ensure proper infusion of active phytoconstituents.

Filtration (if crude extracts are used)

If raw plant materials are used instead of extracts, filter the mixture using muslin cloth or filter paper to remove unwanted residues.



6 : Cooling of Mixture

Allow the mixture to cool slightly (below 40°C) before adding volatile components to prevent their loss.

7 : Addition of Essential Oils and Other Methods. :

Add eucalyptus oil, clove oil, and peppermint oil one by one.

Stir thoroughly after each addition to achieve uniform distribution.

Incorporation of Camphor and Menthol ,Crush camphor and menthol into small particles and add them to the mixture.

EVALUATIONS TESTS:

1 . Organoleptic evaulatoion

This includes the study of physical characteristics such as color, odor, and appearance. The oil should have a pleasant aroma (due to essential oils like eucalyptus and peppermint), a uniform colour, and should be free from any impurities.

1. pH Determination

The pH of the formulation is measured to ensure it is skin-friendly. Ideally, the pH should be near neutral (around 5.5–7) to avoid skin irritation.

2. Viscosity

Viscosity determines the flow property of the oil. It should not be too thick or too thin, ensuring easy application and proper spreadability on the skin.

3. Spreadability Test

This test checks how easily the oil spreads on the skin. Good spreadability ensures uniform application and better therapeutic effect.

4. Stability Studies

The formulation is stored under different conditions (room temperature, accelerated conditions) to evaluate changes in color, odor, and consistency over time.

5. Specific Gravity

This parameter helps determine the density of the oil compared to water, ensuring uniformity and quality of the formulation.



Sr.No.	Test parameters	Procedure	Results
1	Organoleptic Test	Visually check color, smell, and appearance	Pale yellow .
2	PH Test	Measured using pH meter or pH paper	Characteristic aromatic
3	Viscosity	Determined using viscometer	Smooth and slightly viscous
4	Specific Gravity	Measured using specific gravity bottle	0.90 – 0.95
5	Spreadability	Measured by spreading between two glass slides	Oil showed good spreadability,
6	Thermal Stability	Stored at different temperatures (room C high temp) Stored at different temperatures (room C high temp)	The formulation remained stable at elevated temperature

7	Homogeneity	Observed visually for uniformity	The formulation was found to be uniform and homogeneous with no phase separation or visible particles, indicating proper mixing of all ingredients.
8	Washability	Slightly oily residue remains Typical oil property	The formulation was easily washable with water and left no greasy residue on the skin, indicating good washability and user acceptability
9	Analgesic Activity	Applied on affected area and observed relief	The herbal analgesic oil showed significant pain-relieving activity

Conclusion

In this project, a herbal analgesic oil was successfully prepared using natural ingredients like sesame oil, Eucalyptus Oil, Peppermint Oil, Clove Oil, menthol, and camphor. The formulation process was simple and helped in achieving a uniform and stable product.

Different evaluation tests such as colour, odour, pH, viscosity, spreadability, washability, homogeneity, thermal stability, and skin irritation test were performed. The results showed that the oil has good physical properties, proper consistency, and remains stable under different conditions.

The formulation was found to be safe for skin, as no irritation, redness, or swelling was observed. It also showed effective analgesic activity, providing quick relief from pain and maintaining its effect for a longer duration.

Overall, the developed herbal analgesic oil is safe, stable, effective, and easy to use. It is also cost-effective and made from natural ingredients, which reduces the chances of side effects. Therefore, it can be used as a good alternative to synthetic pain relief products.

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