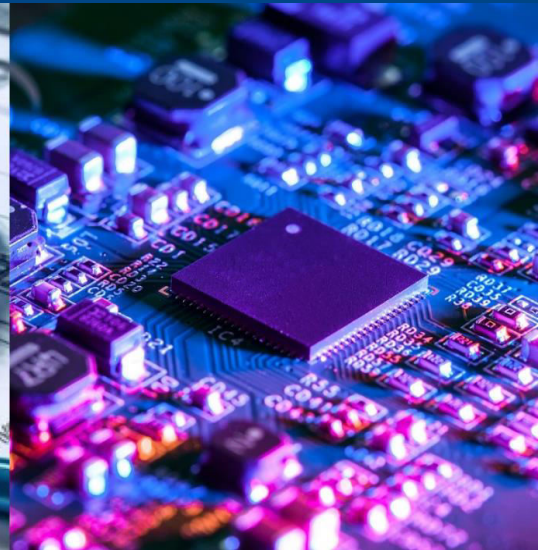
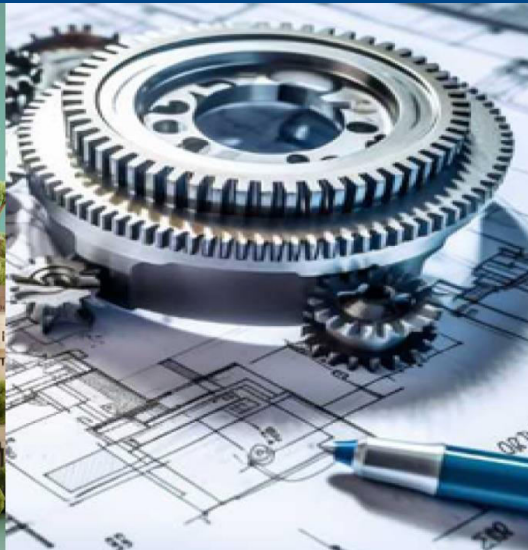
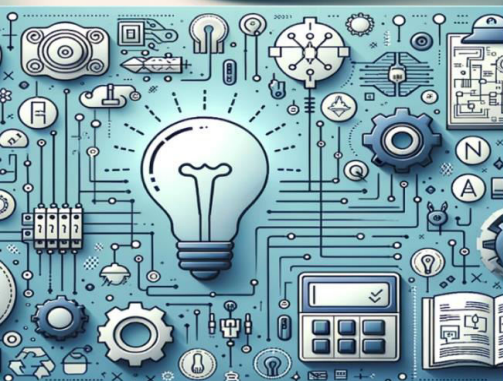




International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 8.206

Volume 8, Issue 4, April 2025



**International Journal of Multidisciplinary Research in
Science, Engineering and Technology (IJMRSET)**
(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Formulation and Evaluation of Herbal Joint Pain Relief Oil

Mr. Vivek Soni, Mr. Nripen Prakash Khare, Dr. Satyaendra Shrivastava

Parijat College of Pharmacy, Indore (M.P.), India

ABSTRACT: A variety of Herbs and essential oils have been traditionally used to manage pain and inflammation due to their natural ability to enhance circulation and penetrate the skin. This study focuses on the formulation and evaluation of herbal pain relief oil made from a blend of eucalyptus oil, peppermint oil, mustard oil, camphor oil, flaxseed, and turmeric. Prepared using the decoction method, the oil is intended for topical application and is free from side effects or skin irritation. Preformulation studies including organoleptic properties, flow property, phytochemical screening, ash value, and viscosity were conducted to assess the quality and characteristics of the ingredients. The aim is to offer a natural, effective, and long-lasting alternative for relieving various types of pain.

KEYWORDS: Flaxseed, turmeric, eucalyptus oil, peppermint oil, mustard oil, camphor.

I. INTRODUCTION

Joint pain and inflammation are common issues that can seriously impact a person's daily life, often causing discomfort and limiting mobility. While conventional medications are widely used for relief, there's growing interest in natural alternatives that are perceived to be safer and just as effective. Among these, herbal oils have been trusted for generations across different cultures to soothe pain and reduce inflammation.

Many herbs and essential oils are known for their healing properties. Eucalyptus oil and peppermint oil are widely recognized for their pain-relieving and anti-inflammatory effects. Turmeric, rich in curcumin, has long been valued for its ability to fight inflammation, while flaxseed oil, contains omega-3 fatty acids, also supports joint health. Mustard oil and camphor oil have traditionally been used to relieve pain and boost circulation.

Although each of these ingredients offers unique benefits, there's limited research on how they work together in a single, topical herbal formulation. This study focuses on formulation and evaluation of an herbal pain relief oil that combines flaxseed, turmeric, eucalyptus oil, mustard oil, peppermint oil, and camphor oil. The aim is to formulate a natural, effective solution that brings together the strengths of each component to help manage different types of pain.

Ideal properties of herbal pain relief oil:

Natural and safe ingredients: All plant based ingredients are used such as herbs and essential oils.

Anti-inflammatory: Contains ingredients with anti-inflammatory properties to help reduce swelling and inflammation associated with pain.

Non-irritating and Skin-Friendly: It's gentle on the skin, free from ingredients that cause irritation, redness, or allergic reactions.

Pleasant Aroma: A soothing, natural fragrance enhances user experience and provides added relaxation.

Non-Greasy: Absorbs easily into the skin without leaving a greasy or sticky residue.

Non-Toxic: Free from harmful chemicals, artificial fragrances, and synthetic additives commonly found in conventional pain relief products.

II. ESSENTIAL OILS

“Essential oils” are the therapeutic, volatile oils that come from plants. In aromatherapy, the word “volatile” is not meant as “explosive” or “inconsistent.” Rather, this refers to the meaning: “evaporating readily at normal temperatures and pressures... [an oil that] changes readily from solid or liquid to a vapor without heating. Essential oils may be found in



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

leaves, rinds of fruit, seeds, bark, heartwood of trees, flowers, and any other part of a plant, so long as the extracted oil has medicinal or otherwise therapeutic use.

Properties of essential oils.

1. Volatile.
2. Healing property.
3. Hydrophobic.
4. Penetrate the skin.
5. Antiseptic.
6. Stimulate white cell production.
7. Either stimulating or sedative.
8. Most are cell renewing.
9. Relieve from stress.

Material and methods:

Active herbal ingredients

- Flaxseed
- Turmeric
- Eucalyptus oil
- Peppermint oil
- Camphor oil
- mustard oil

Drug and excipient profile

Flaxseed: -

Biological name: - *Linum usitatissimum*.

Family: - Linaceae

Biological source: - Dried ripe seeds

Chemical constituents: - Omega-3 fatty acid
Alpha-linolenic acid
Lignans.

Uses: - 1. Inflammation
2. Arthritis pain relief.



Turmeric: -

Biological name: - *Curcuma longa*

Family: - Zingiberaceae

Biological source: - Polyphenol curcumin

Chemical constituents: - Curcuminoids

Uses: - 1. Inflammation
2. Rheumatoid arthritis
3. Skin health



Camphor: -

Biological name: - *Cinnamomum camphora*

Family: - Lauraceae

Biological source: - Natural bhimsemi camphor is obtained by distilling the bark and the wood of the camphor tree.

Chemical constituents: - Linalool, Cineole

Uses: - 1. Relieve pain
2. Reduces inflammation





International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Eucalyptus: -

Biological name: - *Eucalyptus globules labill*
 Family: -Myrtaceae
 Biological source: - Obtained by the distillation of fresh leaves of Eucalyptus globulus.
 Chemical constituent: - Eucalyptol
 Uses: - 1. Arthritis
 2. Anti- inflammatory.
 3. Reduces pain.



Peppermint: -

Biological name: - *Mentha*
 Family: - Lamiaceae
 Biological source: - Fresh leaves
 Chemical constituents: - Methanol
 Uses: - 1. Cooling sensation
 2. Arthritis.



Mustard:

Biological name: - *Brassica nigra*
 family name: - Brassicaceae
 Biological source: - seeds
 Chemical constituents: - Erucic acid and oleic acid.
 Uses: - 1. Muscle pain
 2. Arthritis
 3. Joint pain



Method:

Collection of material

All the ingredients were collected from local market and from college.

Preformulation studies:

Preformulation is the stage in development where we study the physical and chemical properties of a drug substance. This helps ensure the drug will be stable, effective, and safe when formulated into a final product.

Powder flow property:

The way a powder flows is a complicated process influenced by both its own properties and external conditions like humidity. Several factors within the powder itself can impact its flow, but the most important ones are particle size, particle shape, and how varied the particle sizes are in the mixture.

- Bulk density
- Tapped density
- Angle of repose
- Hauser's ratio

Phytochemical screening of drugs:

Phytochemical screening is the process of identifying the different natural compounds found in various parts of a plant. These compounds, known as phytochemicals, are naturally occurring chemicals that plants produce.

- Alkaloid
- Flavonoid
- Terpenoid

Ash value:

Total Ash value Weighed accurately 2 g of air-dried roots powder in a tarred platinum or silica dish and incinerated at a temperature not exceeding 450°C until free from carbon, cooled and weighed. When a carbon free ash cannot be obtained



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

in this way exhausted the charred mass with hot water, collected the residue on an ash less filter paper, incinerated the residue and filter paper until the ash was white or nearly so, added the filtrate, evaporated to dryness and ignited at a temperature not exceeding 450°C. Calculate the percentage of ash with reference to the air dried drug.

Total Ash Value:

Used to determine quality and purity of crude drug and to establish the identity of it. Weigh 2gm of powder drug into the crucible. Ignite sample on burner (flame) until all the carbon is burned off. Cool it and weigh the ash. Calculate the percentage of total ash with references to the air-dried sample of crude drug.

- a. Weight of the empty dish = x
- b. Weight of the drug taken = y
- c. Weight of the dish with ash = z
- d. Weight of the ash = (z - x)

Total ash = 100 (z-x)

Preparation of pain oil:

Every herb selected with good quality by making sure its cleanness. To make Herbal Pain Relief Oil, start by gently warming Flaxseed oil and Mustard oil in a clean glass beaker on low heat—just enough to feel warm when touch but not hot. Stir in Turmeric powder and let it be for about 15-20 minutes, stirring slowly to help release its healing properties. Then add Camphor, crush it into small pieces and add it to the warm oil, letting it dissolve completely. Once done, stop heating and allow the oil to cool at room temperature. Filter it through a muslin cloth or fine sieve to remove any solid residue, leaving behind smooth, infused oil. Then mix the Eucalyptus oil and Peppermint oil and stir well to blend everything together. Pour the finished oil into a dark glass bottle to protect it from light, and store it in a cool, dry place.

Formula of pain relief oil

S.No.	Ingredients	Formulation -1	Formulation -2
1.	Flaxseed oil	50	40
2.	Turmeric	4	3
3.	Eucalyptus oil	10	15
4.	Camphor oil	1	2
5.	Peppermint oil	10	10
6.	Mustard oil	25	30



Fig no. 1: Prepared formulation



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

III. RESULTS AND DISCUSSION

In the results and discussion of a study on herbal pain relief oil would involve analyzing how well the oil reduces pain, comparing its effectiveness to existing treatments or a placebo, and discussing any side effects that appeared and would explore how the oil might work in the body to relieve pain.

Physical evaluation:

Based on color test, formulation-1 and formulation-2 have minor differences. Formulation-1 have brownish yellow color and formulation-2 have light yellow. The odor of both the formulations is refreshing. The appearance of formulation-1 and formulation-2 is transparent. The state both the formulation is liquid.

Parameters	Formulation-1	Formulation-2
Colour	Brownish yellow	Light yellow
Odor	Refreshing	Refreshing
Appearance	Transparent	Transparent
State	Liquid	Liquid

Table no. 1: Observation table for physical evaluation

Spreadability:

The spreadability of Formulation-1 and Formulation-2 is very good. According to the result formulation-2 showed better spreadability compared to formulation-1. The result of all these formulations is shown in the table below.

Formulation	Spreadability
Formulation-1	2 min.
Formulation-2	1 min.

Table no. 2: Observation table for spreadability

Skin irritancy:

The formulation did not cause any redness, swelling (edema), inflammation, or irritation during the irritancy studies. Both formulations were found to be non-irritating, the result of both the formulations are shown in the table below.

Parameters	Formulation-1	Formulation-2
Irritancy	Nil	Nil
Edema	Nil	Nil
Erythema	Nil	Nil

Table no. 3: Observation table for irritancy

Consistency:

The consistency of formulation-1 and formulation-2 was found to be good overall. But formulation-2 has the best consistency compared to formulation-1. The detailed results for both the formulations are given in the table below.

Formulation	Consistency
Formulation-1	Average
Formulation-2	Good

Table no. 4: Observation table for consistency



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Homogeneity:

The oil was found to be homogeneous. The result of both formulations is shown in the table given below.

Formulation	Homogeneity
Formulation-1	Good
Formulation-2	Excellent

Table no. 5: Observation table for homogeneity

S.No.	Evaluation parameter	Formulation-1	Formulation-2
1.	Color	Brownish yellow	Light yellow
2.	Odor	Refreshing	Refreshing
3.	Appearance	Transparent	Transparent
4.	Spreadability	2 min.	1 min.
5.	Skin irritancy	Nil	Nil
6.	Consistency	Average	Good
7.	Homogeneity	Good	Excellent

Table no. 6: The result of evaluation parameters.

IV. CONCLUSION

This study successfully formulated an herbal pain relief oil using flaxseed, turmeric, eucalyptus oil, peppermint oil, mustard oil, and camphor—ingredients known for their traditional and pharmacological benefits in pain management. The oil underwent comprehensive quality control tests, including organoleptic, phytochemical, and physicochemical evaluations, confirming its desirable characteristics such as appropriate color, odor, consistency, homogeneity, and spreadability. The presence of bioactive compounds like alkaloids, glycosides, and flavonoids further supports its therapeutic potential.

The results indicate that the formulated oil is effective in easing pain, reducing inflammation, and offers anti-analgesic, anti-pyretic, and anti-arthritic benefits. Rigorous testing ensured its safety, skin compatibility, and overall quality, aligning with traditional uses while providing a natural and reliable alternative for pain relief. With minimal to no side effects reported.

REFERENCES

1. Welz AN, Emberger-Klein A & Menrad K: Why people use herbal medicine: insights from a focus-group study in Germany. BMC Comple and Alt Med 2018; 18(1): 1-9.
2. Al-Madhagy, *et al.* (2023). A comprehensive review of the health benefits of flaxseed oil in relation to its chemical composition and comparison with other omega-3-rich oils. European Journal of Medical Research, 28, page no. 240.
3. Handran B, Goel A. A randomized, pilot study to assess the efficacy and safety of curcumin in patients with active rheumatoid arthritis. Phytother Res. 2012; 26:1719–1725. doi: 10.1002/ptr.4639.
4. Sharma. P.C, Yelne M.B. and Dennis T.J.- Database on Medicinal Plants used in Ayurveda, Vol-3, Published by CCRAS, Reprint-2005, p-450.



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

5. Dini I. Spices and herbs as therapeutic foods. In: Food Quality: Balancing Health and Disease. Cambridge, Massachusetts, United States: Academic Press; 2018. pp. 433-469.
6. Bent S. Herbal medicine in the United States: Review of efficacy, safety, and regulation. Journal of General Internal Medicine. 2008;23(6):854-859.
7. Amr E. Edris, "Pharmaceutical and Therapeutic Potentials of Essential Oils and Their Individual Volatile Constituents: A Review"; Phytotherapy Research, John Wiley & Sons, Ltd, 2007; 1-16.
8. Ryan N. Harrison, MA, (<http://www.BeWholeBeWell.com>) "Aromatherapy & Essential Oils", 1-20.



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com