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## Research Article

# A Formulation and Evaluation of Curcuma Longa and Zingiber Oil for Arthritis

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## ABSTRACT

The aim of his research work is to develop and evaluate a herbal oil formulation containing turmeric, ginger along with other traditional medicinal plant for treating arthritic. The formulation consisted of natural ingredients including turmeric, ginger, clove, fenugreek seeds, eucalyptus oil and base oils like sesame, castor oils, with camphor as an aromatic component. The study focuses on the formulation and evaluation of herbal pain relief oil using turmeric, ginger, fenugreek seeds are a bioactive compound known for its anti-inflammatory, analgesic, and anti-microbial properties. The oil was prepared decoction techniques. With carrier oil such as sesame or castor oil, both traditionally used for topical applications. The formulation was tested for its efficacy in reducing muscle and joint pain.

## INTRODUCTION

**Arthritis:** Arthritis means inflammation of a joint, affecting any joint in the body. The Greek word “arthritis” is derived from the root word “arthron” and “ites” meaning “inflammation of joints”. Arthritis is a long term, inflammatory, systemic autoimmune disease that causes stiffness, swelling and pain in the joints. Arthritis is the medical term for swelling or inflammation of the joints. Arthritis affect more than 50 million adults in the United States and is the nation’s most common cause of

disability. There is no known cure, but proper early treatment can help prevent permanent joint damage. Arthritis can be different forms such as osteoarthritis (OA), Rheumatoid arthritis (RA), psoriatic arthritis, gout and fibromyalgia but the 2 main types of arthritics:

1. Osteoarthritis
2. Rheumatoid

Arthritis is most common in the following areas of the body:

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- Hands
- Feet
- Knees
- Hips

**Signs & Symptoms:** - It involves the joint:

- Pain & stiffness
- Swelling & Redness
- Decreased range of motion

### **Treatment Of Arthritic:**

- **Medications:** Commonly used medications include nonsteroidal anti-inflammatory drugs (NSAIDs), corticosteroids, and disease-modifying antirheumatic drugs (DMARDs) to relieve pain and inflammation.
- **Therapy:** Engaging in physical therapy can help improve joint function and reduce stiffness.
- **Corticosteroid Injections:** These injections can provide temporary relief from pain and inflammation in the affected joints.
- **Radiofrequency Ablation (RFA):** This procedure involves using heat to target and destroy nerve endings that transmit pain signals, providing relief for some patients.
- **Lifestyle Changes:** Maintaining a healthy weight, regular exercise, and stress reduction techniques can also help manage arthritis symptoms.

### **Drugs Profile:**

#### **1. Turmeric:**

**Synonyms:** Curcuma longa, Curcuma domestica valetan.

**Family:** Zingiberaceae.

#### **Chemical Constituents:**

- **Curcuminoids:** Curcumin, Demethoxycurcumin, bisdemethoxycurcumin.
- **Essential Oil:** Turmerone, Zingiberene.
- **Others:** Starch, Resins, Proteins.

**Biological Source:** Dried rhizomes of curcuma longa linn.

**Mechanism Of Action:** Turmeric, mainly through its active compound curcumin, exerts anti-inflammatory and analgesic effects. It inhibits inflammatory enzymes and reduces pro-inflammatory cytokines, helping to decrease joint pain, swelling, and stiffness when applied topically.

#### **Uses:**

- 1) Boosts Immune System.
- 2) Relieves Itchy Skin.
- 3) Support Digestive Health.



#### **Ginger:**

**Synonym:** Zingiber, Zingiberis.

**Family:** Zingiberaceae.

#### **Chemical Constituents:**

- Gingerols
- Shogaols
- Zingerone

- Essential oil: Zingiberene, Cineole, Camphene.
- 3) sesame oil
  - 4) castor oil
  - 5) eucalyptus oil
  - 6) camphor

**Biological Source:** Fresh dried

**Mechanism of Action:** Ginger reduces arthritis by inhibiting COX AND LOX enzymes, lowering inflammation and pain.

**Uses:**

- 1) Ginger has anti-inflammatory properties that help reduce pain and swelling.
- 2) It may lower blood sugar levels and improve insulin function in people with diabetes.
- 3) Ginger has antibacterial and antifungal properties that help fight infections.
- 4) It is effective in relieving muscle pain and menstrual cramps.



**Excipients:**

- 1) clove
- 2) fenugreek seeds

## **METHODS:**

### **1. Decoction method:**

Crush or powder turmeric, ginger, clove, and fenugreek seeds. Add these herbs to 100 ml of water in a pan. Boil this mixture on low heat until the water reduces to about 25 ml. Strain the liquid to remove solid particles. This is herbal decoction.

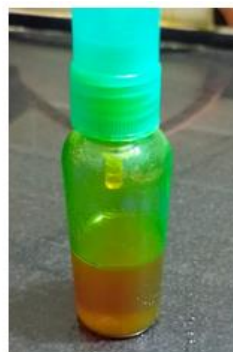
2. Prepare the Oil Base: In another pan, add 40 ml sesame oil + 10 ml castor oil. Heat the oil slightly on low flame.

3. Mix Decoction with Oils: Slowly add the herbal decoction to the warm oil. Let this mixture cook on low flame. Stir continuously and gently.

4. Cook Until Water Evaporates: Continue heating until the water from the decoction evaporates completely. Be careful not to overheat or burn the oil.

5. Add Camphor and Eucalyptus Oil: Once cooled to lukewarm, add camphor and 5 drops of eucalyptus oil. Mix well until camphor dissolves.

6. Strain and Store: Filter the oil and pour it into a clean, dry glass bottle. Store in a cool, dark place.



### Formulation Table:

Ingredients	F1	F2	F3
Turmeric	1gm	1gm	1gm
Ginger	1gm	1gm	1gm
Clove	1gm	1gm	1gm
Fenugreek Seed	1gm	1gm	1gm
Sesame Oil	25ml	30ml	40ml
Castor Oil	25ml	20ml	10ml
Eucalyptus Oil	2-3 drops	2-3 drops	2-3 drops
Camphor	1gm	1gm	1gm

### Evaluation Test:

#### 1. Identification Test for oil:-

- **Colour:-** The colour of the oil was observed by visual examination.
- **Odour:-** The odour of oil was found to be characteristics.
- **State:-** The state of oil was examined visually. The oil was liquid in state.
- **Consistency:-** The formulation was examined by rubbing cream on hand manually. The cream having smooth consistency



**2. Spreadability test:** Assessed by a simple glass slide method. Describes how easily the oil spreads on the skin surface.

**3. Determination of pH:** The pH of the oil was determined by a digital pH meter to confirm skin compatibility. Optimal pH for topical application: 5.5-7.0.



**4. Viscosity:** Determined by a Ostwald viscometer or flow time method. Essential for ensuring ease of application and spreading consistency.

**5. Skin Irritation Test:** Small quantity of oil applied on skin and wait for 10 minutes we evaluate that oil properties on skin.



### RESULT:

Sr. No	Parameter	Result	Observation
1	Colour	Light brown to yellowish	Natural appearance
2	Odor	Characteristics	Acceptable
3	pH	5.2	Ideal 4.5 - 5.5
4	Viscosity	120Cp	Measured using Ostwald Viscometer
5	Spreadability	5.5cm in 1 min	Good Spreadability

6	Skin irritation test	No irritation	Safe for topical use
7	Analgesic activity	62%	Significant
8	Thermal Stability	Stable up to 40°C	No phase separation

## CONCLUSION:

Herbal Pain Relief Oil provides effective and natural relief from daily discomfort and pain. With a selection of tried-and-true herbal formulas, it ensures soothing relief that doesn't trigger harsh side effect found in products that contain chemicals. Whether used to address aching muscles, arthritic joints, or inflammation, it facilitates your body's natural restoration process, so you can be more relaxed and mobile. The perfect choice to use daily, it's gentle yet potent therapy for any regimen. This research provides guidelines on the use of herbal ingredients in the preparation of herbal oil having minimal (or) no side effects. The good quality and purity of the herbal oil has met with almost all the parameters and comes under the specified limits.

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