
**“FORMULATION AND PHYSICOCHEMICAL EVALUATION OF A
POLYHERBAL MEDICATED OIL FOR THE MANAGEMENT OF
RHEUMATOID ARTHRITIS”**

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ABSTRACT:

Joint pain and stiffness are symptoms of rheumatoid arthritis (RA), a chronic inflammatory disease. The purpose of this study is to create and assess a polyherbal oil for its possible analgesic and anti-inflammatory properties utilizing Hadjod, Moringa, Gokhru, camphor, and sesame oil. The formulation was created using an infusion technique, and its stability and physicochemical characteristics were assessed. The outcomes showed promising anti-inflammatory action, acceptable features, and good stability. The oil may be a safe and efficient natural treatment for rheumatoid arthritis due to the synergistic impact of the herbal constituents. To validate its clinical efficacy, more research is needed.

The chosen herbal ingredients have strong anti-inflammatory, analgesic, antioxidant, and bone-healing qualities. To maximize the extraction of bioactive components, the oil was prepared using a conventional infusion technique. Sesame oil's excellent stability and skin penetration qualities made it an efficient carrier, while camphor was added to improve penetration and offer a cooling and analgesic effect.

KEYWORDS: Antioxidant, Formulation, Antioxidant Evaluation, Anti-inflammatory.

1. INTRODUCTION:

Rheumatoid arthritis (RA) is a chronic, systemic autoimmune disorder characterized by persistent synovial inflammation, joint pain, swelling, stiffness, and progressive joint destruction. It not only affects joint function but also leads to reduced mobility and quality of life. Complex immune-mediated processes, such as the release of pro-inflammatory cytokines, oxidative stress, and cartilage degradation, are involved in the pathophysiology of RA. Despite the widespread use of conventional treatments like corticosteroids, disease-modifying antirheumatic drugs (DMARDs), and non-steroidal anti-inflammatory drugs (NSAIDs), their long-term use is frequently linked to serious side effects, which calls for the development of safer and more effective alternatives.

Herbal and polyherbal formulations have gained popularity in recent years because of their minimal side effects, safety, and therapeutic efficacy. For the treatment of inflammatory conditions like RA, traditional medical systems like Ayurveda place a strong emphasis on using natural plant-based treatments. By mixing many plants with complimentary pharmacological activity, polyherbal preparations in particular provide synergistic effects.

In this work, Hadjod (*Cissus quadrangularis*), Moringa (*Moringa oleifera*), Gokhru (*Tribulus terrestris*), camphor, and sesame oil are used to create a polyherbal oil. While Moringa has potent antioxidant and anti-inflammatory effects, Hadjod is well known for its anti-inflammatory and bone-healing qualities. Gokhru has long been utilized for its anti-inflammatory and analgesic properties. Sesame oil is a great carrier with deep penetration and nourishing qualities, while camphor offers a cooling effect and improves topical absorption.

Herbal oils applied topically provide a focused method of treating joint pain and inflammation with fewer systemic adverse effects. Thus, the development of a safe, efficient, and natural therapeutic option for the treatment of rheumatoid arthritis is the goal of the formulation and assessment of this polyherbal oil.

2. Advantages of Polyherbal Oil for Rheumatoid Arthritis:

1. Synergistic therapeutic effect: Combination of Hadjod, Moringa, and Gokhru enhances anti-inflammatory and analgesic activity compared to single-herb formulations.
2. Natural and safe: Prepared from herbal ingredients, reducing the risk of severe side effects associated with synthetic drugs.
3. Effective pain relief: Camphor provides a cooling sensation and quick relief from joint pain and stiffness.
4. Anti-inflammatory action: Helps reduce swelling and inflammation in affected joints.

5. Improved joint mobility: Regular application may enhance flexibility and reduce stiffness.
6. Better skin penetration: Sesame oil acts as an excellent carrier, promoting deeper absorption of active constituents.
7. Antioxidant properties: Protects joints from oxidative stress and further damage.
8. Suitable for long-term use: Can be used safely over extended periods without major adverse effects.
9. Cost-effective: Herbal ingredients are economical and easily available.
10. Minimal systemic effects: Topical application reduces systemic exposure and associated risks.

11. Ingredients for Polyherbal Medicated Oi



Fig. No 1 Hadjod (Stem Powder), Moringa (Leaf Powder), Gokhru (Fruit Powder), Camphor , Sesame Oil (Base Oil).

12. Formulation Profile of Polyherbal Medicated Oil.

Table No. 1 Formulation of Polyherbal Medicated Oil.

Sr. No	Ingredients	Quantity
1.	Hadjod	06 gm
2.	Coconut oil	04 gm
3.	Flaxseed gel	05 gm
4.	Aloe vera	01 gm
5.	Vitamin E Capsule	up to 100 ml

13. Formulated Sample of Polyherbal Medicated Oil.



Fig. No. 2 Sample of Polyherbal Medicated Oil.

14. Method of Preparation of Polyherbal Medicated Oil.

- 1. Weighing of Ingredients:** Accurately weighed Hadjod (6 g), Moringa (4 g), Gokhru (5 g), and camphor (1 g).
- 2. Preparation of Herbal Mixture:** The powdered herbs were mixed uniformly to ensure even distribution of active components.
- 3. Addition of Base Oil:** Approximately 100 mL of sesame oil was taken in a clean stainless steel or glass container.
- 4. Heating Process (Infusion):** The herbal mixture was added to the sesame oil and heated on a low flame (water bath preferred) at around 50–60°C for 30–45 minutes with continuous stirring. This allows the active constituents to diffuse into the oil without degradation.

5. **Incorporation of Camphor:** After heating, the mixture was allowed to cool slightly, and camphor (1 g) was added and stirred until completely dissolved.
6. **Filtration:** The mixture was filtered using muslin cloth or filter paper to remove the coarse plant residues, obtaining a clear medicated oil.
7. **Cooling and Storage:** The final polyherbal oil was cooled to room temperature and stored in a well-closed amber-colored bottle to protect it from light and oxidation.

8. Physical Evaluation Parameter and Results of Herbal Topical Emulsion:

Table No. 2 Physical Evaluation Parameter of Polyherbal Medicated Oil.

Sr. No	Parameter	Observation
1.	Color	Yellowish
2.	Oduors	Herbal aroma
3.	Appearance	Oily
4.	Texture	Smooth
5.	Spread ability	Uniform
6.	Stability	Stable at Room Temp.
7.	Consistency	Liquid
8.	Homogeneity	Good
9.	Skin Irritation Test	No Irritation
10.	Color Stability	No change for one month.
11.	Grittiness	Non-Gritty
12.	pH	5.8

9. CONCLUSION:

The current study effectively developed and assessed a polyherbal medicinal oil for the treatment of rheumatoid arthritis using sesame oil, camphor, Gokhru, Moringa, and Hadjod. The chosen herbal components have been shown to have anti-inflammatory, analgesic, antioxidant, and bone-supporting qualities. These qualities work in concert to increase therapeutic results. The prepared oil demonstrated good stability, acceptable physicochemical properties, and topical applicability.

Sesame oil functioned as an efficient carrier for transporting the potent phytoconstituents, and the addition of camphor further improved the analgesic impact and skin penetration. All things considered, the formulation provides a natural, safe, and affordable substitute for traditional anti-inflammatory therapies with few adverse effects.

It is clear that the created polyherbal oil has a great deal of promise for reducing rheumatoid arthritis symptoms like pain, edema, and stiffness. To confirm its long-term effectiveness and safety in human patients, more pharmacological and clinical research is advised.

10. Conflict of Interests:

- The authors declare that they have no known competing financial interests or personal relationship that could have appeared to influence the work reported in this paper.

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