

# Formulation And Evaluation of Herbal Oil In The Treatment of Rheumatoid Arthritis

Ms.Sakshi Narayan Manal , Mr.Rahul S. Mohan

Nandkumar Shinde College of Pharmacy Vaijapur, Maharashtra-423701.

## Abstract

*Rheumatoid arthritis (RA) is a chronic autoimmune disorder characterized by inflammation, joint pain, and progressive cartilage damage. Conventional treatments often have adverse effects, leading to increased interest in herbal formulations as alternative therapies. This study focuses on the formulation and evaluation of an herbal oil for the treatment of RA, utilizing medicinal plants with anti-inflammatory, analgesic, and antioxidant properties. A polyherbal oil was prepared using extracts from *Tridax procumbens*, *Ashwagandha*, *Indian Bdellium*, and sesame oil as a base. These ingredients were selected for their well-documented pharmacological activities in reducing inflammation and alleviating joint pain. The oil was formulated using the infusion technique, followed by physicochemical evaluations, including viscosity, pH, spreadability, and stability studies. The therapeutic efficacy of the herbal oil was assessed using patch test. The results demonstrated significant inhibition of inflammatory markers, reduced paw swelling, and improved mobility in treated subjects compared to the control group. Additionally, no significant adverse effects were observed, confirming the safety profile of the formulation.*

**Keywords :-** Rheumatoid Arthritis , *Tridax procumbens* , *Ashwagandha* , *Indian Bdellium* , sesame oil

## Introduction:-

Millions of individuals worldwide suffer from the crippling disease known as arthritis, which causes pain, swelling, and stiffness in the joints. Rheumatoid arthritis, gout, and osteoarthritis are common forms that frequently impair mobility and quality of life. There is growing interest in natural, less intrusive arthritis treatments as the world's population ages [1]. Arthritis, generally inflammation of joints, is one of the oldest known diseases occurring almost in all age groups. In India, more than about 20% of the total population is suffering from arthritis [2]. Rheumatoid Arthritis (RA) is a chronic autoimmune disease of unknown etiology, characterized by joint synovial inflammation and progressive cartilage and bone destruction resulting in gradual immobility [3]. Herbal oil is a natural extract derived from medicinal plants, infused in a carrier oil, and used for therapeutic purposes, including the treatment of arthritis. These oils contain bioactive compounds with anti-inflammatory, analgesic, and circulation-boosting properties that help relieve pain, reduce swelling, and improve joint mobility.

## Material And Method :-

All the natural materials used in the present study i.e. *tridax procumbens*, *ashwagandha*, *guggul*, sesame oil, and turmeric are purchased from the local market. In a form of dried powder and were authenticated at Nandkumar Shinde College of Pharmacy Vaijapur.

### 1] *Tridax Procumbens* :

- **Synonym :-** coat buttons, Mexican daisy, *tridax daisy*, *Amellus pedunculatus*, *Balbisia canescens*, *Balbisia elongata*, *Chrysanthemum*
- **Class –** Magnoliopsida
- **Subclass -** Asteridae
- **Order -** Asterales
- **Family -** Asteraceae
- **Genus -** *Tridax*

- **Species** - *Tridax procumbens*
- **Chemical constituents** :- flavonoids (catechins and flavones), alkaloids, tannins, saponins and carotenoids [4] [5] [6] [7]

Figure No 1 :- *Tridax Procumbens*

## 2] *Ashwagandha* :-

- **Synonyms** :- Indian Ginseng , Winter Cherry , Ajagandha , Asgandha , Varahkarn , Vajigandha Hayagand , *Withania somnifera*
- **Class** : Dicotyledons
- **Order** : Tubiflorae
- **Family** : Solanaceae
- **Genus** : *Withania*
- **Species** : *somnifera* Dunal
- **Chemical constituents**:- withanolides (steroidal lactones), alkaloids, and saponins, [8] [9]

Figure No 2 :- *Ashwagandha*

## 3] *Indian Bdellium* :-

**Synonyms** :- Indian bdellium-tree, gugal, guggal, guggul, gugul, or mukul myrrh tree

**Class**: Trichophytes

**Subclass** : Angiosperms

**Order:** Sapindales

**Family:** Burseraceae

**Genus:** Commiphora

**Species:** C. wightii

**Chemical constituents :-** volatile oil, resin, gum, and various compounds like guggulsterones (E- and Z-), guggulsterols, guggulignans, and guggultetrols [10] [11] [12]



Figure No 3 :- Indian Bdellium

**Formulation Table :-**

Sr No	Ingredients	Quantity	Category
1	Tridax procumbens	10gm	Anti-inflammatory & healing
2	Ashwagandha	10gm	For Stress and rejuvenation
3	Indian Bdellium	10gm	Cartilage and bone protection
4	Sesame oil	100ml	Carrier oil
5	Turmeric	5gn	Anti allergic

**Procedure :-**

Dry the herbs *tridax procumbens*, *ashwagandha* in shaded area away from direct sunlight

↓

Guggul resin , break into the small pieces into the mortal pestle

↓

Make the coarse powder of above herbs by grinding

↓

Heat the sesame oil in double boiler

↓

at the room temperature 40- 50°C

↓

Add the herbs in heated oil , be aware about herbs are not burn or overheat

↓

Let's mixture infuse over a low heat for about 30 – 45 min stirring occasionally

↓

The oil should turn slightly greenish due to herbs & add turmeric powder

↓

After the herbs are have infused , remove the oil from the heat and allow it to cool to room temperature

↓

Strain the oil through a fine muslin cloth to remove the plant residue and solid particles

↓

Store the oil in dark glass container to protect it from light [13] [14]

**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 [15]

**2] Spreadability test :-** Excess sample was placed between the two glass slides and 100 g weight was placed on the glass slide for 5 min to compress the sample to a uniform thickness. Weight (100 g) was

added to the pan. The time in seconds required to separate the two slides was taken as a measure of spreadability.[16]

Spreadability was calculated by following formula

$$S = M \times L / T$$

Where

S= Spreadability

M= Weight tide to upper side

L= Length of glass slides

T= Time taken to separate the slides It was found to 5 seconds.

**3] washability test :-** Washability was determined by rubbing the little amount of base on hand for test.[17]

**4] Irritancy test :-** Small quantity of oil applied on skin and wait for 10 minutes after 10 minutes we evaluate that oil properties on skin. [18]

**5] Viscosity:-** The viscosity of the formulation was determined by Brookfield viscometer at 100 r/min, using the spindle No. 7 [19]

### Results:-

Medicinal plants used in the formulation of Herbal oil we found in these plants were found to be tridax procumbens, ashwagandha and guggul have been reported for anti arithmetic properties. The various quality control parameters Like Physical Appearance/Visual Inspection, PH, Irritancy, Washability, Viscosity, Spread Ability . All parameter gives favorable result. The result obtained on present study shows that the active ingredients of these drugs when incorporated in Herbal oil gives more stable products with good anti-inflammatory activity.

Sr .No	Test	Result
1	Colour	Yellowish green
2	Odour	Pungent
3	State	Liquid
4	Consistency	Thin
5	Spreadability Test	32mm
6	Washability test	Slightly washable
7	Irritancy test	Non irritant



8	Viscosity	21cps
9	pH	6.3

### Conclusion :-

The present study was point out with the object of preparing the Herbal oil that improves the anti inflammation property and treat the rheumatoid arthritis. Herbal oil was formulated with the tridax procumbens, ashwagandha, guggul, sesame oil and turmeric that are commonly used for the treatment of rheumatoid arthritis. The main challenge lies in the selection of natural material which can be rationally justified and comparable to that of synthetic material. In present study our aim is to develop an Herbal oil which would be natural. We Formulated an Herbal oil by using plant extracts which are commonly used traditionally and lauded for rheumatoid arthritis.

### Reference:-

- 1] Jyoti B. Wadekar , Ramesh L. Sawant, Unnati B. Patel ; Rheumatoid arthritis and herbal drugs: A review , The Journal of Phytopharmacology 2015; 4(6): 311-318
- 2] Harris E.D. Rheumatoid arthritis:Pathophysiology and implications for therapy. N. Engl. J. Med. 1990; 322:1277-1289.
- 3] Firestein G.S. Evolving concepts of rheumatoid arthritis. Nature. 2003; 423:356-361.
- 4]Wani M, Pande S and More N. "Callus induction studies in Tridax procumbens L." International Journal of Biotechnology Applications. Vol.2,no.2, (2010), pp.11-14.
- 5]Bhagwat DA, Killedar SG and Adnaik RS. "Anti-diabetic activity of leaf extract of Tridax procumbens". International Journal of Green Pharmacy (IJGP). (2008), pp.126-128.
- 6] Sreeramulu N, Suthari S, Ragan A and Raju VS. "Ethno-botanico-medicine for common human ailments in Nalgonda and Warangal districts of Telangana, Andhra Pradesh, India. Annals Plant Sciences.vol.2,no.7, (2013),pp.220-229.
- 7] Vivek P. Navale, Mayur K Koljatkar , Prof. Gaurav Wadurkar : Review on Tridax Procumbens : Journal of Emerging Technologies and Innovative Research .Volume 9 Issue 12 - 2022.
- 8]M.A. Weiner, J. Weiner. Ashwagandha (India ginseng). In: Herbs that Heal. Quantum Books, Mill Valley, CA; 70–72 (1994).
- 9] S. Sharma, S. Dahanukar, S.M. Karandikar. Effects of long-term administration of the roots of ashwagandha and shatavari in rats. Indian Drugs 29: 133–139 (1985).
- 10]Sarup, P., Bala, S., & Kamboj, S. (2015). Pharmacology and Phytochemistry of Oleo-Gum Resin of Commiphora wightii (Guggulu). Scientifica, 2015, 138039. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4637499/>
- 11] DC singh , Srishti Dhyani , Gagandeep Kaur ; A critical review on guggul [ commiphora wightii (ARN) Bhand] & Miraculous medicinal uses ; International Journal of Ayurveda and Pharma Research : 2015
- 12] The Ayurvedic Pharmacopeia of India [Part 2] ( formulation) volume -1 , page no -93-94
- 13] The Ayurvedic Pharmacopeia of India [Part 2] ( formulation) volume -1 , page no- 126

14] Ayurvedic medicine :- The principle of traditional practice ‘ by Sebastian pole

15] Gupta N, Dubey A, Prasad P, Roy A. Formulation and evaluation of herbal fairness cream comprising hydroalcoholic extracts of *Pleurotus ostreatus*, *Glycyrrhiza glabra* and *Camellia sinensis*. *Pharma Bio Sci J*. 2015: 40-45.

16] Balkrushima O , Anurova Maria N , Zavalniy Michaels , Demina Natalia B , Bardakav Alexander I , Kransnyuk Ivan I ; Dermatologic gels spreadability measuring methods comparative study : *International Journal of Applied Pharmaceutics* , Volume 14 , Issue 1, 2022

17] Aswal A, Kalra M, Rout A. Preparation and evaluation of polyherbal cosmetic cream. *Der Pharmacia Lettre*. 2013; 5(1):83–88.

18]Muggu SankaraBhavani, CH.Naveena, P.Nagamani, B. Sowmya . Formulation and Evaluation of Herbal Face Cream : *International Journal of Pharmaceutical Sciences Review and Research* : 2023

19] Rignall A. ICHQ1A (R2) stability testing of new drug substance and product and ICHQ1C stability testing of new dosage forms. *ICH quality guidelines: An implementation guide*. 2017.

