



REVIEW ON FORMULATION AND EVALUATION OF HERBAL CREAM OF CYPERUS ROTUNDUS AND VITEX NEGUNDO FOR THE TREATMENT OF ARTHRITIS

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ABSTRACT

A chronic inflammatory condition, arthritis causes joint discomfort, swelling, and decreased mobility. There is a growing interest in safer herbal alternatives because conventional medicines frequently offer relief but may have long-term negative effects. *Vitex negundo* and *Cyperus rotundus* are two medicinal plants with strong anti-inflammatory, analgesic, antioxidant, and antibacterial qualities. The creation and assessment of a herbal cream with ethanolic extracts of *Vitex negundo* leaves and *Cyperus rotundus* rhizomes for the treatment of arthritis is the main topic of this review.

KEYWORDS: Arthritis, Herbal cream, *Cyperus rotundus*, *vitex negundo*, ethanol extract.

INTRODUCTION

The term "arthritis" refers to inflammation of the joint (the words "artho" and "itis" stand for joint and inflammation,

respectively). The inflammatory condition known as arthritis results in joint discomfort, stiffness, swelling, and reduced range of motion.^[1] It is a systemic autoimmune, inflammatory, long-term condition. An autoimmune and inflammatory disease that devastates joints is called arthritis. Arthritis is characterized by cartilage degradation and a reduction in

cartilage, which causes the bones to rub against one another and produce pain, edema, and stiffness.^[2] It is brought on by T lymphocytes, which emit degradable enzymes and cellular poisons called cytokines. A bacterial infection of the joint area causes septic arthritis, which first affects the knee and then the hip, shoulder, and elbow. Gram-positive *Staphylococcus aureus* and some other bacteria, such as *Nisseria gonorrhoeae* and *Nocardia asteroides*, are the main culprits behind septic arthritis.^[3]

The most prevalent type of arthritis is osteoarthritis. Rheumatoid arthritis, fibromyalgia, and gout are other prevalent rheumatic disorders associated with arthritis. In and around one or more joints, rheumatic disorders frequently cause discomfort, soreness, stiffness, and swelling. The symptoms may appear quickly or gradually. Certain types of arthritis, such as lupus (SLE) and rheumatoid arthritis, can affect several organs and have extensive symptoms.^[4]

CREAM

Creams are semisolid dosage forms that are applied topically to the skin, on the surface of the eye, or rectally, vaginally, or through the nose for medicinal, preventative, or cosmetic purposes. Face cream is used topically to soften and cleanse the skin. Skin creams serve two functions: they protect the skin from external contaminants and supply it with a calming effect. There are various types of cream, including hand and body massage, vanishing, night, cleansing, cold, and foundation creams. Cosmetic goods are used to make the skin more attractive and beautiful. These cosmetic products also protect the skin from both external and endogenous toxic factors. Cosmetics are used not only to enhance one's exterior look, but also to maintain excellent health by minimizing skin problems. Cosmetics are substances that are designed to be applied to the human body to cleanse, beautify, promote attractiveness, and change appearance without harming the body's structure or functions.

There are numerous dose forms utilized in the pharmaceutical sector. Creams refer to semi-solid dosage forms. They are usually used topically to the skin. They are a combination of oil and water.

Classification of Creams

Types of creams according to function, characteristic properties and type of emulsion

1. Make-up cream (o/w emulsion): a) Vanishing creams b) Foundation creams.
2. Cleansing cream, cleansing milk, cleansing lotion (w/o emulsion)

3. Winter cream (w/o emulsion): a) Cold cream or moisturizing creams.
4. All-purpose cream and general creams.
5. Night cream and massage creams.
6. Skin protective cream.
7. Hand and body creams.

HERBAL CREAM

Herbal creams are emulsions of oil and water. Neem, papaya, aloe vera, tulsi, and turmeric are all possible ingredients. Herbal creams may contain tinctures, extracts, or essential oils. Vitamins and minerals are natural nutrients present in herbal creams that do not contain potentially dangerous synthetic ingredients.

Synthetic creams may have harmful consequences on the skin. Herbal creams are used to prevent this from happening. Herbal creams include only herbal and shrub-derived substances. They are commonly utilized since they have no side effects when applied to the skin. Additionally, the natural ingredients make them simple to prepare.

TYPES OF HERBAL CREAM

a) Oil-in-water (O/W) Creams: Creams with small oil droplets spread in a continuous phase are known as oil-in-water (O/W) creams. An oil-in-water (O/W) emulsion, on the other hand, is one that has oil droplets scattered throughout the aqueous phase.

b) Water-in-oil (W/O) Creams: Water-in-oil (W/O) creams are those that include both water and oil in a continuous phase. When the dispersed phase is water and the dispersion medium is oil, the emulsion is referred to as water-in-oil (W/O).

CYPERUS ROTUNDUS

Cyperi Rhizoma (CR) is the dry rhizome of the Cyperaceae plant *Cyperus rotundus* L. Known as the "holy medicine" of gynaecology, it has a rich history of usage in clinical medicine. The smell of CR is both sweet and bitter. *Cyperus rotundus* is a perennial plant from the Cyperaceae family. *Cyperus rotundus*, termed muthakach in Tamil (korai kizhangu in some places).



Figure No. 1: Medicinal Uses of Cyperus Rotundus.

According to the Ayurvedic system, the rhizomes of *C. rotundus* have astringent, diuretic, diaphoretic, analgesic, aromatic, carminative, antitussive, emmenagogue, litholytic, stimulant, stomachic, vermifuge, tonic, and antibacterial properties.

VITEX NEGUNDO

Vitex negundo (Nirgundi) is a big aromatic shrub with five leaves. This plant is in the Verbenaceae family. Almost every component of this plant has medicinal value, and it is used to cure a variety of diseases in ancient alternative medicine systems such as Ayurveda, Siddha, and Unani. The *Vitex* plant describes its medicinal properties in Sanskrit. "Nirgudati Shareeram Rakshati Rogebhyah.



Figure No. 2: Medicinal Uses.

The plant is bitter, acrid, astringent, cephalic, stomachic, antiseptic, alterant, thermogenic, depurative, rejuvenating, ophthalmic, anti-gonorrheic, anti-inflammatory, and antipyretic, and it is effective for bronchitis, asthma, and spleen enlargement.

The roots are tonic, febrifuge, antirheumatic, diuretic, expectorant, and can be used as a demulcent for dysentery, cephalalgia, otalgia, colic, uropathy, wounds, and ulcers.

MATERIALS AND METHODS

Materials

- Cyperus rotundus L. rhizomes
- leaves of vitex negundo
- 95% ethanol
- Stearic acid
- Glycerin
- Triethanolamine
- Liquid paraffin
- Sodium benzoate
- Propylene glycol
- Bees wax
- Cetostearyl alcohol
- Water.

PREPARATION OF PLANT EXTRACT

SOXHLET EXTRACTION OF CYPERUS ROTUNDUS RHIZOMES

The rhizomes of *Cyperus rotundus* were gathered and cleaned with fresh water to eliminate



Fumigated and dried at room temperature in the shade



They were ground into a powder using a pulverizer and sieved using a 40 mesh screen.



The powdered medication is weighed and put through a series of soxhlet Apparatus with ethanol for length of 48hrs



Finally obtained extract is filtered through a muslin cloth then it was dried in the vacuum.

SOXHLET EXTRACTION OF VITEX NEGUNDO LEAVES

The leaves were cleaned and allowed to dry for ten days in the sun.



After being pulverized, the dried leaves were effectively extracted using ethanol for 24hrs.



Extract was air dried at room temperature and sample was collected.

PHYTOCHEMICAL ANALYSIS

1. TEST FOR ALKALOIDS(Wagner's test)

Wagner's test for alkaloids involved adding 1.5% hydrochloric acid to 1ml of extract and adding a few drops of Wagner's reagent. The appearance of yellow or brown precipitate implies that Alkaloids were present.

2. TEST FOR FLAVONOIDS

A portion of the extract was treated with a 5 ml dilute ammonia solution, followed by concentrated H₂SO₄. A yellow coloration in the extract shows flavonoids. After a while, the yellow color fades away.

3. TEST FOR PROTEIN

Add 1% sodium hydroxide and 2-3 drops copper sulphate solution to the extract. The presence of red violet pigment indicated the presence of proteins.

4. TANNINS TEST

Add 1ml of extract to 2ml of 5% ferric chloride. Dark blue indicates a positive tannin test.

5. TEST FOR STEROIDS(Salkowski Test)

Add a few drops of chloroform and sulphuric acid to the extract. A bluish red to cherry color in chloroform confirms the presence of steroids.

6. TEST FOR SAPONINS(Foam test)

To test for saponins (foam test), agitate a few ml of extract in a test tube with a tiny amount of water. Saponins were present if the foam was stable and distinctive.

7. TEST FOR GLYCOSIDES

To test for glycosides, mix the plant extract with 2 ml of acetic acid and 2 ml of chloroform. After cooling, the mixes were treated with concentrated Sulphuric acid. Green color suggests glycosides are present.

EVALUATION OF HERBAL CREAM

Physical evaluation

- a. **Color:** The cream's color is determined by visual examination.
- b. **Odor:** The cream's odor is often distinct.
- c. **Consistency:** To check the consistency, the cream is manually rubbed on the hand.
- d. **State:** The cream's condition is visually evaluated. Cream must be semisolid.

pH

A digital pH meter can be used to assess the pH of the herbal cream. After creating the cream solution with 100 milliliters of distilled water, it should be left for two hours. To determine the solution's pH, measure it three times and average the results.

Homogeneity

The formulation was assessed for uniformity by visual appearance and touch.

Solubility

The solubility test should be done in boiling water, ether, and chloroform.

Stability study

A stability study was conducted to assess the cream's stability at different temperatures.

Spreadability

Divide cream evenly between two glass slides and apply a weight of 100 grams to them for 5 minutes. The spreadability of two slides is determined by measuring the movement of the upper glass slide over the lower slide or the time it takes to separate them.

The formula for it is $S = m \times l/t$

Where, m = weight on the upper slide.

l = length travelled on the glass slide.

t = amount of time.

Skin irritability test

A skin irritancy test was performed by applying a little amount to human skin and observing the results.

CONCLUSION

This review suggests that *Cyperus rotundus* and *vitex negundo* have anti-inflammatory and analgesic properties that can be used to treat arthritis. The presence of phytochemical compounds like flavonoids The presence of alkaloids, tannins, terpenoids, and phenolic chemicals contributes to their antiinflammatory, analgesic, and antioxidant activity.

The topical cream containing these ingredients effectively relieves joint pain and inflammation with minimal adverse effects. Combining both components in a cream formulation enhances pain and inflammatory alleviation.

The article suggests that using herbal cream with these extracts could be a safe, effective, and environmentally responsible alternative to synthetic antiarthritic formulations.

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