



“A Review On Poly Herbal Analgesic Liniment For Effective Pain Relief In Arthritis”

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Abstract

Arthritis is a chronic inflammatory disorder characterized by pain, swelling, stiffness, and reduced mobility of joints. Conventional analgesic therapies often produce adverse effects upon prolonged use. The present study aimed to formulate and evaluate a polyherbal analgesic liniment containing coconut oil, eucalyptus oil, Vitex negundo oil, clove oil, menthol, camphor, methyl salicylate, beeswax, sodium benzoate, and isopropyl alcohol for effective pain relief in arthritis. Various formulations were prepared using different concentrations of herbal oils and evaluated for physicochemical parameters such as appearance, pH, viscosity, spreadability, phase separation, washability, permeation flux, and accelerated stability studies. The optimized formulation exhibited acceptable physicochemical characteristics, good stability, excellent spreadability, and enhanced permeation properties. The synergistic action of herbal ingredients contributed to significant analgesic and anti-inflammatory activity. The study concludes that the developed polyherbal liniment may serve as a safe, stable, and effective alternative for the management of arthritis-associated pain and inflammation.

Keywords: Polyherbal Liniment, Arthritis, Analgesic, Anti-inflammatory, Topical Drug Delivery, Vitex negundo, Clove Oil.

Introduction

A pain relief liniment is a liquid or semi-liquid topical preparation applied to the skin to relieve pain, stiffness, and inflammation in muscles and joints. It is commonly used for conditions such as sprains, strains, arthritis, and backache.

Liniments typically contain active ingredients like menthol, camphor, methyl salicylate, isopropyl alcohol and essential oils, which work by producing a warming or cooling sensation on the skin. This effect helps to increase blood flow, relax muscles, and reduce the perception of pain (a mechanism often linked to the concept of counterirritation).

They are easy to apply—usually rubbed or massaged into the affected area—and are quickly absorbed, providing fast, localized relief without significant systemic effects. Overall, pain relief liniments are widely used due to their convenience, rapid action, and effectiveness in managing mild to moderate musculoskeletal pain.

Arthritis

Arthritis is a condition that causes inflammation of the joints, leading to pain, swelling, stiffness, and reduced movement.

In arthritis, the joints (where two bones meet) become inflamed. This can damage cartilage (the cushioning tissue), making movement painful and difficult.

Common symptoms

- Joint pain
- Swelling
- Stiffness (especially in the morning)
- Redness and warmth around joints
- Reduced range of motion

Causes

- Aging
- Joint injury
- Autoimmune conditions
- Genetic factors
- Obesity

Analgesic herbal liniments play an important supportive role in the management of Arthritis, especially for reducing pain, stiffness, and inflammation without the side effects often associated with long-term use of synthetic drugs.

liniment are topical preparations for application to skin to relieve pain and stiffness. These liniment contains counter irritant chemical compounds such as methyl salicylate. Pain is an unpleasant feeling often caused by intense or damaging stimuli, such as stubbing a toe, burning a finger, putting alcohol on a cut and bumping the funny bone. The international association for the study of pains widely used definition states, pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Pain motivates the individual to withdrawn from damaging situations, to protect a damaged body parts while it kills and to avoid similar experiences in future. Most pain resolves promptly hence the pain stimulus is removed and the body has healed, but sometimes pain persists despite removal of stimulus and apparent healing of the body and sometimes pain arrive in the absence of any detectable stimulus, damage or disease.

liniment are prepared topically to be applied to the skin to reduce stiffness and discomfort. An Ayurvedic mixture of potent essential oils, analgesic herbal liniment provides immediate relief from colds, headaches, and backaches. Herbal liniment with organic essential oils, organic beeswax, and other suitable herbal ingredients are medicinal topical preparations that can be applied to human skin.¹ A vital link between basic illnesses and secondary consequences is pain. It can set off a harmful and dynamic interaction

between biological, social, and psychological elements, which can result in patients' impairment and bad prognosis.² According to the International Association for the Study of Pain,

pain is a complex phenomenon that includes modulation, affective reactions, nociception, afferents to the central nervous system, endogenous analgesia, behavioural changes, and shifts in social roles.³ A prevalent, complicated, and upsetting issue, chronic pain has a big influence on both society and people. Although it frequently manifests as a consequence of an injury or illness, it is a distinct condition unto itself and not just a symptom of another illness. Thus, chronic pain has a medical definition as well as its own taxonomy.

Key Mechanisms of Action

- Counter-irritation : Ingredients such as camphor and menthol stimulate nerves in the skin to produce a "hot" or "cold" effect, which hijacks the nervous system's attention, masking deeper pain signals.
- Increased Blood Flow (Vasodilation): The warmth produced by these ingredients stimulates blood circulation to the affected area, helping to reduce inflammation and relax muscles.
- Sensory Distraction: The stimulation of skin nerve endings creates a "gate control" effect, effectively masking deep muscular or joint pain with the superficial stimulation.

Core Mechanisms of Action

- Counter-irritation: Ingredients like menthol and camphor stimulate sensory nerve endings in the skin, initiating a "cooling" or "warming" effect. This sensation competes with pain signals being sent to the brain, effectively "masking" the deeper pain.
- Reduced Inflammation: Methyl salicylate, a common ingredient related to aspirin (NSAID), penetrates the skin to inhibit cyclooxygenase enzymes (COX) locally, reducing the production of inflammatory chemicals like prostaglandins
- Increased Blood Circulation: The irritation caused by the balm increases blood flow (rubefacient effect) to the affected area, promoting healing and reducing muscle stiffness.

Advantages of Polyherbal Analgesic Liniments

- Rapid onset of action
- Localized drug delivery
- Reduced systemic adverse effects
- Avoidance of first-pass metabolism
- Better patient compliance
- Synergistic activity of multiple herbs
- Easy application
- Cost-effective treatment.

Herbal Ingredients Used in Polyherbal Analgesic Liniment

❖ Coconut Oil



Biological : Cocos nucifera

Kingdome : Plantae

Family : Arecaceae

Genus : Cocos L

Coconut oil is mainly composed of fatty acids (triglycerides) along with small amounts of vitamins and bioactive compounds. Here are the key ingredients.

Key Uses of Coconut Oil in Analgesic Liniment

- Joint and Muscle Pain Relief
- Hemorrhoid Management
- Skin Inflammation and Soothing
- Massage Therapy for Chronic Pain
- Oral Pain Reduction

❖ Eucalyptus Oil



Scientific Name : eucalyptus globulus labill

Kingdome : plantae

Family : myrtaceae

Genus : eucalyptus L her

The main active ingredient present in eucalyptus oil is: 1,8-Cineole (Eucalyptol) This is the primary bioactive compound, usually making up 70–85% of eucalyptus oil (especially from Eucalyptus globulus). It is responsible for most of the oil's medicinal properties.

Uses

- Relieves pain and inflammation
- To Treat Rheumatoid Arthritis;
- Augments Skin and Hair
- Herbal medicine
- Repellent and biopesticide

❖ Vitex Negundo



Scientific Name : vitex negundo

Kingdome : plantae

Family : Lamiaceae

Genus : vitex

Nirgundi oil works due to a combination of active compounds, with β -caryophyllene as the primary one, supported by cineole, sabinene, and other terpenes.

Negundo oil is an effective analgesic, anti-inflammatory, anti-catarhal and appetizer among many other attributes that benefit us to stay healthy and recover from various illness.

❖ Clove Oil



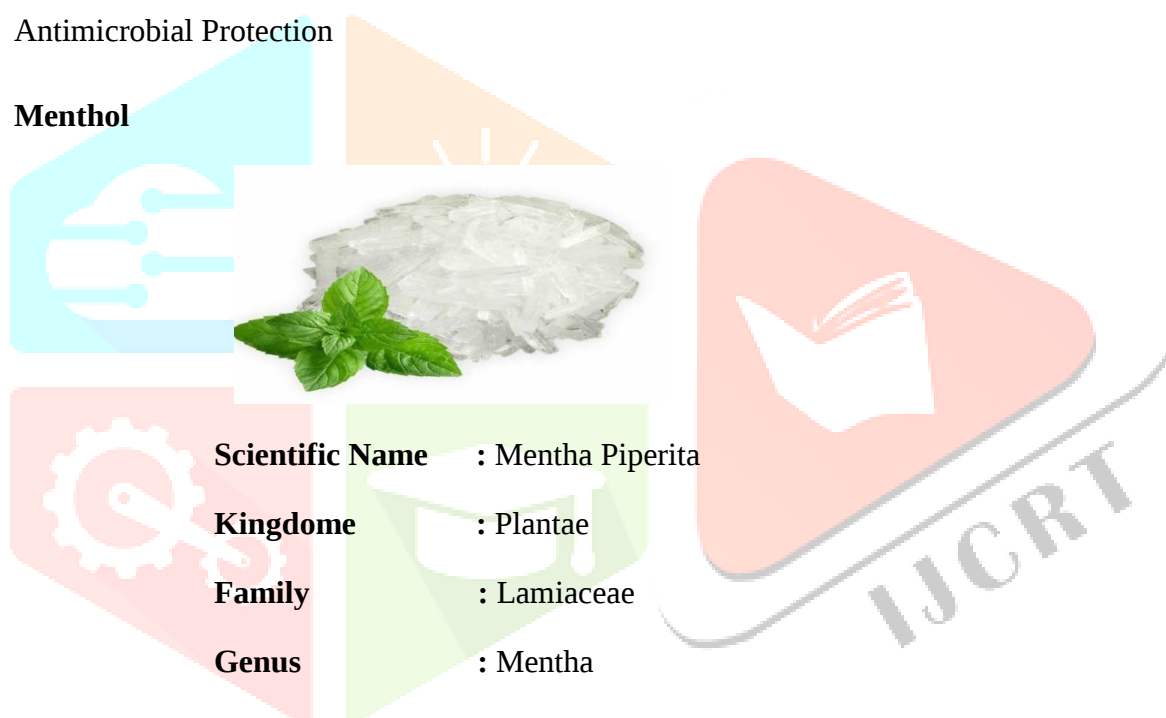
Scientific Name	: Syzygium aromaticum
Kingdome	: Plantae
Family	: Myratacae
Genus	: Syzygium

The main active ingredient present in clove oil is Eugenol, Makes up about 70–85% of clove oil (from Syzygium aromaticum). It is the primary compound responsible for most of its medicinal properties.

Key uses of clove oil in analgesic liniment include

- Pain Management (Analgesic)
- Anti-inflammatory Agent
- Topical Warming Effect
- Counter-irritant
- Antimicrobial Protection

❖ Menthol



Scientific Name	: Mentha Piperita
Kingdome	: Plantae
Family	: Lamiaceae
Genus	: Mentha

Menthol is an organic compound, more specifically a monoterpenoid, made synthetically or obtained from the oils of corn mint, peppermint, or other mints. It is a waxy, clear or white crystalline substance, and melts slightly.

Primary uses of Menthol:

- Pain Relief
- Respiratory Relief
- Skin Care & Topical Solutions
- Oral Care
- Cosmetics
- Counterirritant Mechanism
- Localized Anesthetic
- Increased Blood Flow
- Rapid Pain Managemen

❖ Camphor



Scientific Name : Cinnamomum Camphora

Kingdome : Plantae

Family : Lauraceae

Genus : Cinnamomum

Camphor is derived from the wood of camphor laurel and other related trees of laurel family. Camphor is bicyclic mono terpenoid. It is a white crystalline substance with strong odour and pungent taste.

Key Uses of Camphor in Analgesic liniment:

- Muscle and Joint Pain Relief
- Counterirritant
- Action Increased blood Circulation
- Anti-inflammatory
- Treats toenail fungus
- Treats arthritis
- Antispasmodic
- Relieves congestion and coughing

Conclusion

The present study concluded that the formulated polyherbal analgesic liniment is a safe, stable, and effective herbal topical preparation for the treatment and management of arthritis. The formulation showed satisfactory physicochemical properties such as good homogeneity, suitable viscosity, excellent spreadability, easy washability, and absence of phase separation. The pH of the formulation was found to be compatible with skin, and the patch test revealed no signs of irritation or allergic reaction, indicating its safety for topical application. The herbal ingredients including Coconut Oil, Clove Oil, Eucalyptus Oil, nirgundi oil, menthol, and camphor may provide significant analgesic and anti-inflammatory effects, which help in reducing joint pain, inflammation, stiffness, and muscular discomfort associated with arthritis. The accelerated stability study confirmed that the formulation remained physically stable under different storage conditions without significant changes in appearance, odor, pH, or consistency. Therefore, the developed polyherbal analgesic liniment can be considered a promising herbal alternative for topical arthritis therapy with good patient compliance and minimal side effects.

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