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Formulation and Evaluation of Herbal Pain Relief Spray

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ABSTRACT: Oral drugs are commonly prescribed for the treatment of acute pain. Other than these agents, certainanticonvulsants and antidepressants are also prescribed for chronic pain. Although being effective inproviding pain relief, oral administration frequently results in systemic adverse drug reactions (ADRs),which may prevent their ongoing use and result in their discontinuation. With the growing interest inHerbal Therapies among persons associated with chronic pain, inflammation, Arthritis, orother medical conditions. There exists a need for formulation & evaluation of Herbal painrelief spray Topical analgesics are useful to provide symptomatic benefits seen with oral agents butdevoid of the systemic ADRs. Essential oils extracted from plants, some of which are known analgesiccompounds like essential ginger oil, peppermint oil, eucalyptus oil, camphor, turpentine oil. Thematerials we used have not been used to make this pain relief spray before. The aim of this studywas to evaluate the sensorial profiling of newly formulate the rapid action spray in meeting theconsumer expectations as topical pain relief spray.

Keywords - Anti-inflammatory, Analgesic, Essential oils, Pain relief.

I. INTRODUCTION:

The International Association for the study of pain defines pain as a multidimensional entity that involves nociception, afferents to the central nervous system, modulation, affective responses, endogenous analgesia, behavioural adjustments, and changes in social roles. While pain trigger factors are endured, pain degenerates to an independent response, manifesting even when it is possible to eradicate the primary stimulus. Transdermal delivery system is one which is aleternative way preferred over oral and injections. This is due to distinct advantages such as avoidance of first pass metabolism relating to oral administration, provision of steady-state drug-plasma concentration, improvement of patients adherence, prevention of gastro-intestinal irritation, and reduction in medical waste of hypodermic needles in low resource settings. [2,3] . The skin provides larger surface area for absorption and non-invasive procedure for the transdermal drug system such as patch that enables continuous intervention with the applied medication. [4] The amount of drug delivered through the skin and the obtained therapeutic effect depends on the ability of the drug to permeate through the skin. The permeation of the drug into the skin is restricted by the stratum corneum (SC), the outermost layer of the skin, which is surrounded by a lipid region. [5] Numerous approaches like iontophoresis, sonophoresis, electroporation, use of chemical permeation enhancers (PE), microneedle, and the use of lipid vesicles have been studied for the last 30 years to break the barrier properties of SC and some of them have produced commercial success.[6,7] The development of the transdermal delivery system can be classified into three generations. The first generation consists of low-molecular-weight, lipophilic, and low-dose drugs. The second generation uses permeation enhancement methods such as conventional chemical PEs, iontophoresis, and non cavitational ultrasound in order to increase the drug permeability through the SC. The selection of PE was carried out carefully according to several criteria; i) enhanced permeation ability without causing permanent disruption in the structure of the stratum corneum, ii) ability to enhance transdermal flux in maximum amount iii) permeation ability without causing any injury to the deeper tissues. The third generation focuses more on giving the effects on the stratum corneum by incorporating microneedles, thermal ablation, microdermabrasion, electroporation, and cavitational ultrasound. [8] The anti-inflammatory properties of ginger have been known and valued for centuries. During the past 25 years, many laboratories have provided scientific support for the long-held belief that ginger contains constituents

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with anti-inflammatory properties. The original discovery of ginger's inhibitory effects on prostaglandin biosynthesis in the early 1970s has been repeatedly confirmed. This discovery identified ginger as an herbal medicinal product that shares pharmacological properties with non-steroidal anti-inflammatory drugs. Ginger suppresses prostaglandin synthesis through inhibition of cyclooxygenase-1 and cyclooxygenase-2. An important extension of this early work was the observation that ginger also suppresses leukotriene biosynthesis by inhibiting 5-lipoxygenase. This pharmacological property distinguishes ginger from nonsteroidal anti-inflammatory drugs. This discovery preceded the observation that dual inhibitors of cyclooxygenase and 5-lipoxygenase may have a better therapeutic profile and have fewer side effects than non-steroidal antiinflammatory drugs. The characterization of the pharmacological properties of ginger entered a new phase with the discovery that a ginger extract (EV.EXT.77) derived from Zingiber officinale (family Zingiberaceae) and Alpina galanga (family Zingiberaceae) inhibits the induction of several genes involved in the inflammatory response. These include genes encoding cytokines, chemokines, and the inducible enzyme cyclooxygenase-2. This discovery provided the first evidence that ginger modulates biochemical pathways activated in chronic inflammation. Identification of the molecular targets of individual ginger constituents provides an opportunity to optimize and standardize ginger products with respect to their effects on specific biomarkers of inflammation. Such preparations will be useful for studies in experimental animals and humans.

Ingredients:

1) Ginger (Zingiber officinale):

Synonym: Zingiber, zingiberies, sunthi.

Biological Source: Ginger consist of whole or cut dried scrapped or unscrapped rhizomes of Zingiberofficinale Roscoe, family Zingiberacae.

Geographical Source: It is said to be native of South East Asia, but is cultivated in Caribbean islands, Africa, Australia, Mauritius, Jamaica, Taiwan, India. More than 35% of the world's production is from India.

Uses: It is used as stomachic, an aromatic, a carminative, stimulant, and flavouring agent. It is used in mouthwashes, ginger beverages, and liquors. Ginger powder is also effective in motion sickness.

2) Peppermint Oil: [14]

Synonym: Brady Mint.

Botanical Source: It is the oil obtained by the distillation of Mentha piperata, belonging to family Labiatae.

Geographical source:

It is mainly found in Europe, United States, and also in damp places of England.

3) Camphor: [17]

Synonym: Gum Camphor, Japan Camphor.

Biological Source: It is solid ketone, obtained from the volatile oil of CinnamomumCamphora.

Geographical Source:

It is mainly found in Sri Lanka, Egypt, South Africa, Sumatra, Brazil, Jamaica, Florida, Japan, South China, California and India.

Uses:

It is mainly used in pain relief medication, including topical analgesic.It can also help to reduce chronic muscle and joint pain.

4) Turpentine Oil: [15]

Synonyms: OleumTerbinthae, rectified oil of turpentine.

Biological Source: It is obtained by the distillation of oleoresin from PinusLongifoliaRoxb belonging to family Pinaceae.

Geographical Source: It is cultivated in India, Pakistan, United State, France, Europe and Russia.

Uses: It is used as counterirritant, rubefacient, in swelling and neuralgia. It is mild antiseptic and used chronic bronchitis as expectorant.

It is used in the preparation of disinfectants, insecticides, paints, varnishes and pine oil.

5) Eucalyptus oil: [16]

Synonym:

Stringy bark tree, Blue gum, Blue gum tree.

Biological Source: It is an essential oil obtained by the distillation of fresh leaves pf Eucalyptus globulus belonging to family Myrtaceae.

Geographical Source: It is found in Australia, Tasmania, United State, Spain, Portugal, Brazil, North and South Africa, India, France and Southern Europe.

Uses: It is used as antiseptic, flavouring agent, deodorant, antimicrobial, and used in treatment of lung diseases, sore throat and vapour bath for asthma.

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Aims and Objective:

Aim: To study the formulation and evaluation of herbal pain relief spray.

Objective: Formulation and Evaluation of herbal pain relief spray.

To check various evaluation parameters like pH, colour, odour, molecular weight, etc.

II. MATERIAL AND METHODS:

Formulation Table:

Sr. No.	Ingredients	Quantity
1	Ginger oil	8ml
2	Peppermint oil	4ml
3	Camphor	2ml
4	Turpentine oil	2ml
5	Eucalyptus oil	2ml

Material[18]

1. Ginger oil – from the extract
2. Peppermint oil – purchased from an ayurvedic shop
3. Camphor - purchased from an ayurvedic shop
4. Tarpin oil - purchased from an ayurvedic shop
5. Nilgiri oil - purchased from an ayurvedic shop 6. Water – distilled water

Method: [12]

Take a beaker and add all oils in it with continuous stirring. After mixing boil the mixture in water bath for 10-15 minutes.

Cool the mixture at room temperature and filter it through the filter paper. Filled the mixture in a suitable container. .

Evaluation parameter:

1) pH: The pH of all formulations were found to be in the range of 5.20 to 6.0 which signifies that formulations will not cause any irritation to skin.

2) Droplet Size: A typical cloud droplet is 20 microns in diameter, a large herbal pain relief spray particle is 100 microns in diameter, a small herbal pain relief spray particle is 1 micron in diameter,

3)Spreadability: Spreadability of the formulations were found to be in the range of 5.6 cm to 8.7 cm.

4) Molecular Weight: Molecular weight of the formulation was found to be 368.53 g/mol.

5) Colour: The colour of formulation by visualising it found to be pale yellow.

6) Dose: Three to four times in a day.

III. CONCLUSION:

It is concluded that hebal pain relief spray has shown efficacy in mild to moderate cases on applying on affected area. Pain relief spray is used for relieving symptoms such as pain and inflammation. Therefore, whenever you experience symptoms of pain and inflammation disorders, you should use a pain-relieving spray. However, proper precautions should always be observed to ensure that the spray does not harm anyone. If symptoms persist for more than 7 days after applying pain relief spray, you should not hesitate to seek help from a medical practitioner.

IV. RESULT:

Formulation and Evaluation of herbal pain relief spray was performed

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