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Review Article

Formulation and Evaluation of Herbal Headache Relief Gel

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ABSTRACT

Migraine remains the second most common cause of disability worldwide. The history and clinical examination are used to make the diagnosis; imaging is typically not required. Depending on the frequency of headaches and the presence or absence of an aura, migraines can be classified. Whether a patient has episodic or chronic migraines depends on the number of headache days. Both the migraine itself and its onset can be treated. In this review, we take a pragmatic approach to migraines using the most recent data.

INTRODUCTION

One of the most prevalent nervous system disorders is headache disorders, which are typified by recurrent headaches. A few primary headache disorders, including migraine, tension-type headache, and cluster headache, are characterized by a painful and incapacitating headache. [1] Among these, migraine headaches are common,

prevalent, incapacitating, and basically curable, but they are still underdiagnosed and undertreated. [2] A common chronic headache disorder, migraine is characterized by recurrent attacks that last four to seventy-two hours, have a pulsating quality, can be moderately or severely intense, are exacerbated by regular physical activity, and are accompanied by nausea, vomiting, photophobia, or phonophobia.

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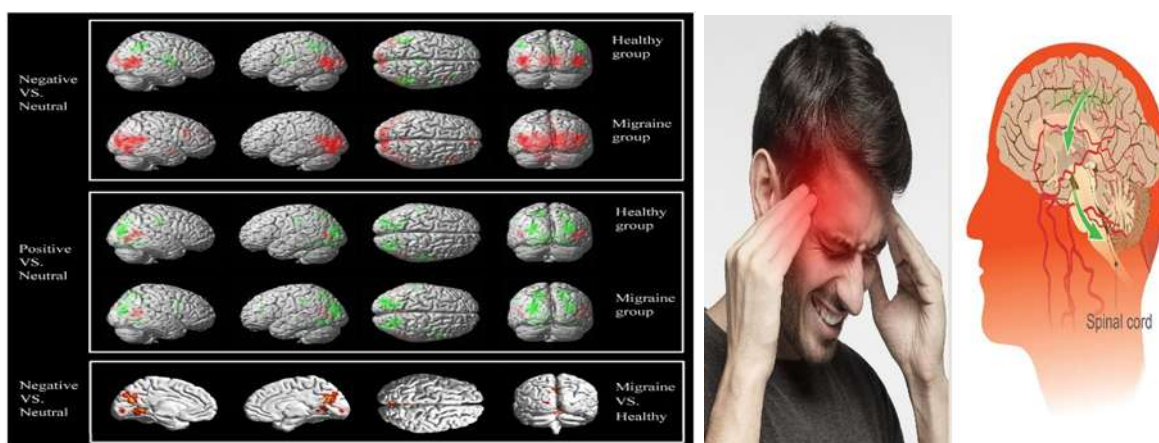


Fig.no.1.1Migraine Headache

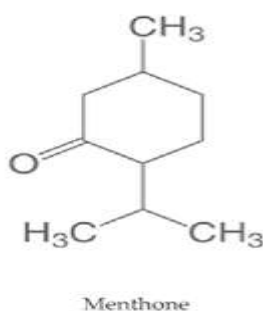
Because of its significant impact on the patient's quality of life (QOL), it has been dubbed the seventh disabling. [4] It is the most common reason why kids and teenagers get headaches. Because migraine affects children and their families and because different phenotypes and potential differential diagnoses make diagnosis and treatment challenging, research on migraine in the pediatric population is crucial.

DRUG USED FOR MANAGEMENT OF MIGRAINE HEADACHE

1. Peppermint oil: Peppermint is used in migraine gels because it offers fast, natural, and multi-action

relief. Its cooling, analgesic, muscle-relaxing, anti-inflammatory, and aromatherapeutic properties work together to reduce migraine pain safely and effectively.

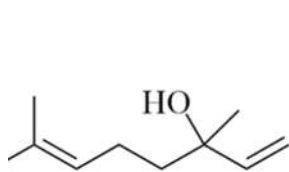
Phytoconstituents – Peppermint (*Mentha piperita*) is rich in bioactive compounds, primarily menthol (35–60%) and menthone (15–32%), which define its aroma and therapeutic properties. Other key constituents include menthyl acetate, 1,8-cineole (eucalyptol), limonene, menthofuran, acids (rosmarinic acid), and flavonoids (hesperidin, luteolin).



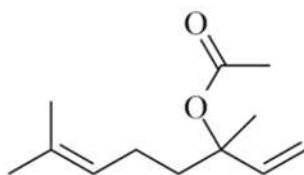
2. Lavender oil: Lavender (*Lavandula angustifolia*) is commonly used in migraine gel because of its analgesic, calming, and anti-inflammatory properties. It helps relieve headache and migraine symptoms through multiple mechanisms.

Phytoconstituents – Lavender contains over 300 active compounds, primarily essential oils, with linalool (24–38%) and linalyl acetate (26–36%) as the dominant therapeutic constituents. These volatile monoterpenes are responsible for its sedative, antioxidant, antimicrobial, and anti-inflammatory properties. Other significant

compounds include terpinen-4-ol, lavandulol, camphor, and various phenolic acids.



Linalool

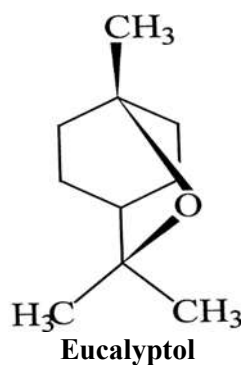


Linalyl acetate



3. Eucalyptus oil: Eucalyptus (*Eucalyptus globulus*) is used in migraine gel because of its analgesic, cooling, anti-inflammatory, and vasomodulatory properties, which help reduce headache and migraine symptoms.

Phytoconstituents – Eucalyptus leaves are rich in phytochemicals, primarily dominated by volatile oils, with 1,8-cineole (eucalyptol) being the major compound (40–90%) responsible for its medicinal properties. Key constituents include monoterpenes (α -pinene, limonene), sesquiterpenes, flavonoids (eucalyptin), tannins, and phenolic acids.

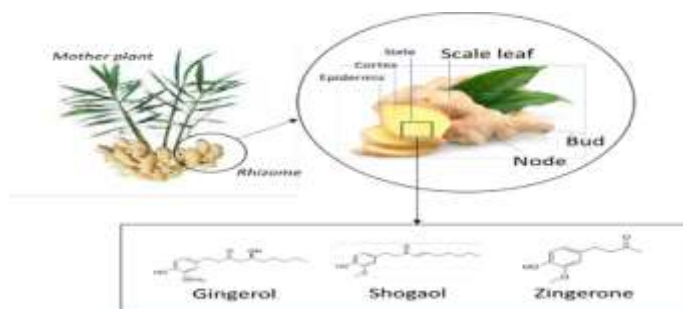


Eucalyptol



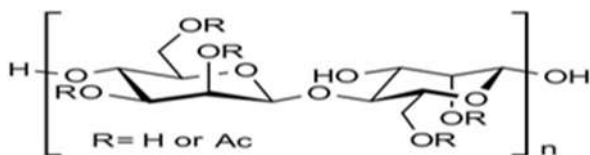
4. Ginger extract: Ginger (*Zingiber officinale*) is increasingly used in topical migraine gels and pastes because it contains potent bioactive compounds that target the physiological trigger of a migraine—specifically inflammation and blood vessel changes—without the systemic side effects of oral medication.

Phytoconstituents – Ginger contains over 400 active compounds, primarily phenolics and terpenes, that provide antioxidant, anti-inflammatory, and antimicrobial properties. The major pungent, bioactive compounds include gingerols, which convert to shogaols during heating/storage, along with paradols, zingerone, and essential oils like zingiberene.

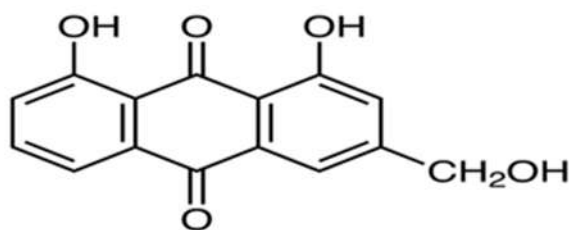


5. Aloe vera gel: Aloe vera is used in migraine gel mainly as a soothing base and anti-inflammatory agent. It enhances both the effectiveness and skin compatibility of the gel.

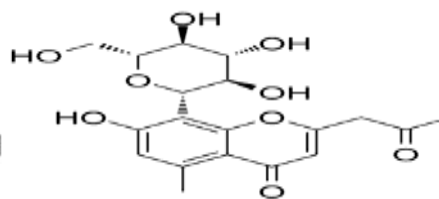
Phytoconstituents – Aloe vera contains over 110 active phytochemicals, primarily found in the leaf gel and yellow latex, vitamins (A, C, E), enzymes, minerals, lignin, saponins, and salicylic acid. These compounds provide antioxidant, anti-inflammatory, and antimicrobial properties



Polysaccharides(Acemannan)



Aloe Emodin



Aloesin

SAFETY PROFILE AND SIDE EFFECTS

Migraine treatments are generally divided into acute (abortive) and preventive categories, each with distinct safety considerations. Because many migraine medications work by affecting blood vessels or neurotransmitters like serotonin, their safety profiles often focus on cardiovascular health and neurological side effects.

ACUTE (ABORTIVE) MEDICATION

Acute migraine medications, or abortive treatments, aim to stop headaches in progress and are most effective when taken immediately. First-line options include NSAIDs (ibuprofen, naproxen), acetaminophen, and caffeine combinations (Excedrin). Prescription triptans (sumatriptan, rizatriptan) are highly effective, while newer options include gepants (Ubrovelvy, Zaveprex) and ditans.

PREVENTION

Prevent headaches by maintaining a consistent daily routine: sleep 7–9 hours, stay hydrated, eat balanced meals regularly, and manage stress through techniques like yoga or deep breathing. Reduce screen time using the 20-20-20 rule, maintain good posture, limit alcohol and caffeine, and keep a headache diary to identify triggers.

CONCLUSION

The anti-migraine gel represents a significant advancement in localized pain management. By bypassing the gastrointestinal tract, it offers a rapid-onset alternative for patients who suffer from nausea or those who do not respond well to oral medications. Its ability to deliver targeted relief directly to the trigeminal nerve pathways makes it a versatile and essential tool in a comprehensive migraine management toolkit.

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