



# Management of Migraine by Use of Herbal Drugs: A REVIEW ARTICLE

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## Abstract:

Herbal remedies have a long history and are becoming more popular around the world. An increasing body of research supports the effectiveness of different "complementary" and "alternative" medical treatments in the treatment of headache issues. Herbal medications appear to be promising options for treating migraine sufferers. Clinical investigations have revealed that the components of *Petasites hybridus*, *Tanacetum Parthenium*, and *zingiber officinale* have anti-migraine properties. A variety of recreational drugs and herbal remedies have been suggested to help with headache relief, however the quality of clinical investigations in this area is poor and inconclusive. In this area, more research is required.

## Key words

*Recreational Drugs, Petasites hybridus, Tanacetum Parathenium, Zingiber Officinale.*

## Introduction:

Migraines are extremely frequent, affecting more than one out of every ten individuals on the planet, according to some estimates. The preceding aura (sometimes), head and eye discomfort, and other symptoms they produce (nausea, vomiting, phonophobia, and photophobia, to name a few) can be debilitating, resulting in significant time lost at work and school. While there are many helpful treatments for migraine prevention and treatment, the phenomena of medication overuse headache is becoming more well-known (particularly associated with non steroidal anti inflammatory drugs and opioids). While drugs can help with symptoms during acute episodes and may even prevent attacks, they do not cure migraine and must be used long-term. Even with triptans, one of the most specialized therapies for acute migraines, 50% of patients are pain-free within two hours after taking them, and about 30% suffer a recurring migraine headache within 24 hours. As a result, herbal and other natural medicines have a lot of room in migraine treatment. The pathogenesis of migraine is complicated, and it has a number of consequences for herbal treatment. [1]



**Figure 1: Migraine [9]**

Migraine headaches begin in major part in the meninges' blood vessels, particularly the dural arteries, as well as the meninges themselves. In fact, the only way to experimentally produce migraine is to irritate the dural vasculature. While it was once thought that dilatation of these arteries was the essential trigger for migraine headaches, it is now obvious that neurogenic inflammation involving the trigeminal nerve and inhibition of 5-HT<sub>1B/1D</sub> receptors are the primary causes of the condition. Additional information from the skin and muscles of the head is conveyed to central brain areas via the trigeminal nerve, which contributes to migraine development and progression. Many vasoactive neuropeptides, such as serotonin, calcitonin gene-related peptide (CGRP), pituitary adenylate cyclase-activating peptide (PACAP), histamine, substance P, neurokinin A, bradykinin, and prostaglandins, are key regulators of the neurogenic inflammation, platelet activation/aggregation, and mast-cell degranulation seen in migraine. The brain stem, hypothalamus, thalamus, and cerebral cortex all have a role in migraine pain and aura modulation. Cortical spreading depression is a phenomena that occurs when a wave of neuronal alterations washes throughout the cerebral cortex, causing a hypersensitive state throughout neural networks and, as a result, contributing to migraine. Finally, due to circadian patterns of activity in distinct brain areas, migraine sensitivity varies over the course of a 24-hour period, and hence external triggers do not always have the same effect.[1]

While the focus of this essay will be on herbal migraine prevention and treatment, it is important to highlight that other natural remedies can also be beneficial. It is critical to identify and eliminate migraine triggers, if at all feasible, in order to potentially cure the patient's problem without the use of drugs or herbal remedies. Various foods or dietary components, such as vasoactive amines, tannins, salicylates, food additives, monosodium glutamate, caffeine, aspartame, nitrites, and alcohol, are frequently cited as migraine triggers. As a result, most patients should begin an elimination-challenge diet as soon as feasible in order to identify specific dietary triggers as clearly as possible. It's especially crucial to remember that blood antibody tests for food reactivity aren't suggested in this situation because there are many non-immunologic reactions to food that these tests can't detect, resulting in far too many false-negative findings. At most, a doubtful, short-term effect from serum antibody guided elimination was identified in one of the most thorough randomized trials. Regulating the menstrual cycle, controlling stress, sleeping on a regular cycle and for a sufficient amount of time, and eating regularly are all potential triggers that should be handled (as fasting is frequently reported as a trigger). Herbal drugs may provide symptomatic relief and assist calm reactions by neurovascular processes that cause migraine episodes while patients work with their practitioner to identify and eliminate triggers, potentially helping to migraine prevention. [1]

## **Types of migraine:**

### **1] Migraine with aura (complicated migraine )**

An aura is experienced by about 15% to 20% of those who suffer from migraine headaches.

### **2]Migraine without aura (common migraine )**

This type of migraine headache occurs without the presence of an aura. Although the symptoms are the same, the phase does not occur.

### **3] Migraine without head pain**

This type of migraine is also called as "silent migraine," or "acephalgic migraine," because it involves the aura symptom but not the headache that usually follows.

#### 4] Hemiplegic migraine

On one side of your body, you'll have temporary paralysis (hemiplegia) or neurological or sensory alterations. Temporary numbness, acute weakness on one side of your body, a tingling sensation, a lack of sensation, dizziness, or vision problems may accompany the onset of the headache. Sometimes it is accompanied by head discomfort, and other times it is not.

#### 5] Retinal migraine (ocular migraine )

You might feel a dull aching behind one of your eyes that spreads to the rest of your head, as well as a momentary, partial, or complete loss of vision in that eye. It could be a matter of seconds or months before you lose your vision. A retinal migraine should always be reported to a healthcare physician because it could be a sign of something more serious.

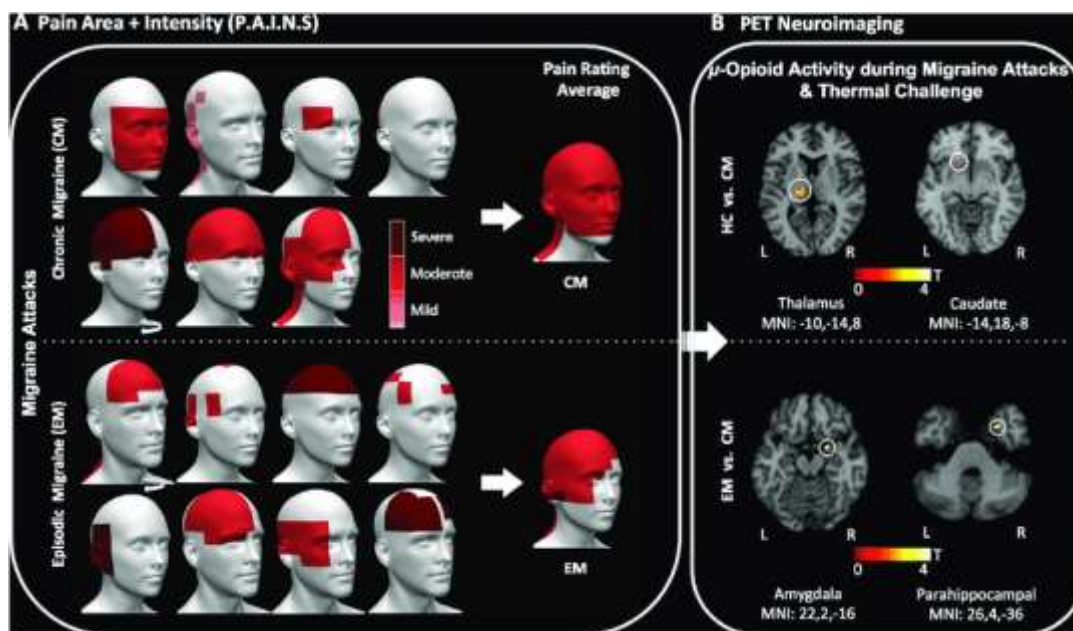


Figure 2: Types of Migraine (Migraine Attacks) [10]

#### 6] Chronic migraine

When a migraine happens at least 15 times each month, it is considered chronic. The strength of the discomfort, as well as the symptoms, can alter regularly. Those who suffer from chronic migraines may take pain relievers for more than 10 to 15 days each month, which, regrettably, might contribute to headaches occurring more frequently.

#### 7] Migraine with brainstem aura

Vertigo, slurred speech, double vision, or loss of balance are symptoms of this migraine that appear before the headache. The back of your head may be affected by the headache pain. These symptoms usually strike suddenly and are accompanied by difficulty speaking, ringing in the ears, and vomiting.

#### 8] status migrainosus

This is a very rare and severe migraine that can last up to 72 hours. The agony from the headache and nausea can be excruciating. This form of migraine can be caused by certain drugs or medication discontinuation. [2]

#### Migraine Causes:

Migraine headaches are a symptom of the migraine disorder. Doctors aren't sure what causes migraine headaches, although they appear to be linked to changes in the brain and DNA. Migraine causes including weariness, strong lights, and changing weather can even be passed down from your parents. For many years, scientists believed that migraines were caused by alterations in brain blood flow. Most people now believe that while this can add to pain, it is not the cause of it.

A migraine is thought to begin when overactive nerve cells send out signals that activate your trigeminal nerve, which controls sensation in your head and face. This triggers the release of hormones like serotonin and calcitonin-related peptide in your body (CGRP). CGRP causes the blood vessels in your brain's lining to expand. Neurotransmitters then trigger inflammation and discomfort. [3]



**Migraine risk factors:**

According to the American Migraine Foundation, more than 38 million Americans suffer from headaches. Some factors may increase your chances of getting them:

**1] Sex** -Women are three times as likely than males to suffer from migraines.

**2] Age** -Migraine headaches affect the majority of adults between the ages of 10 and 40. However, many women find that their migraines improve or disappear around the age of 50.



*Figure 3: Risk factors of migraine [11]*

**3] Family History** - Four out of every five migraine sufferers has a family member who also suffers from the condition. If one parent has had similar headaches before, their child has a 50% risk of getting them as well. The chance increases to 75% if both parents have them.

**4] Other medical condition** -Anxiety, depression, bipolar disease, sleep difficulties, and epilepsy can all increase your chances.[3]

**Triggers of migraine:**

It's unclear what causes this shift in brain activity, but it's possible that your genes predispose you to migraines when a certain trigger occurs. Hormonal, emotional, physical, nutritional, environmental, and pharmaceutical factors have all been cited as probable migraine causes. These triggers are highly personal, however keeping a diary to see if you can find a consistent trigger may be beneficial. It can also be difficult to identify if something is a true trigger or if what you're experiencing is a migraine attack's first symptom. [4]



**Figure 4: Triggers of Migraine [12]**

### 1] Hormonal Changes

- Some women get migraines around the time of their menstruation, probably due to changes in hormone levels such as oestrogen.
- These migraines normally strike two days before and three days after your menstruation begins.
- Pure menstrual migraine is a type of migraine that solely affects women during their periods.
- Most women, however, get migraines at different times of the month, which is known as menstrual-related migraine.
- Although the menopause might induce headaches or make them worse in some women, many people find that their migraines improve after menopause.

### 2] Emotional triggers

- Stress
- Anxiety
- Tension
- Shock
- Depression
- Excitement

### 3] Physical triggers

- Tiredness
- Poor-quality sleep
- Shift work
- Poor stance
- Neck or shoulder tension
- Jet lag
- Low blood sugar (hypoglycaemia)
- If you're not used to it, rigorous exercise

### 4] Dietary triggers

- Cured meats, yeast extracts, pickled herrings, smoked fish (such as smoked salmon), and certain cheeses all contain the chemical tyramine (such as cheddar, stilton and camembert)
- Certain foods, such as chocolate and citrus fruit
- Goods containing caffeine, such as tea and coffee
- Meals that are missed, delayed, or irregular

## 5] Environmental triggers

- Climate changes, such as humidity shifts or extremely cold temps
- Flickering screens, such as those found on televisions and computers
- A stuffy ambiance
- Strong odours
- Dazzling lights [4]

## Symptoms & Phases of Migraine:

Prodrome, Aura, Headache, and Postdrome are the four stages of Migraine. The four steps might take anywhere from 8 to 72 hours to complete. Around 30% of people have symptoms before they get a headache.

### 1] Prodrome

You might notice minor changes one or two days before a migraine, such as constipation, mood swings from depression to exhilaration, food cravings, neck stiffness, increased thirst and urination, or frequent yawning, one or two days before a migraine.

### 2] Aura

Aura might develop before or during migraines for certain people. Auras are reversible nervous system symptoms. They're most commonly visual, but they might also contain other types of disturbances. Each symptom normally starts slowly, develops up over a few minutes, and lasts between 20 and one hour.

#### Symptoms of aura

- Seeing diverse shapes, bright spots, or flashes of light are examples of visual phenomena.
- Loss of vision
- Feelings of "pins and needles" in an arm or leg
- Weakness or numbness on one side of the body or in the face
- Speaking in a difficult manner
- Noises or music are heard
- Jerking or other uncontrollable movements

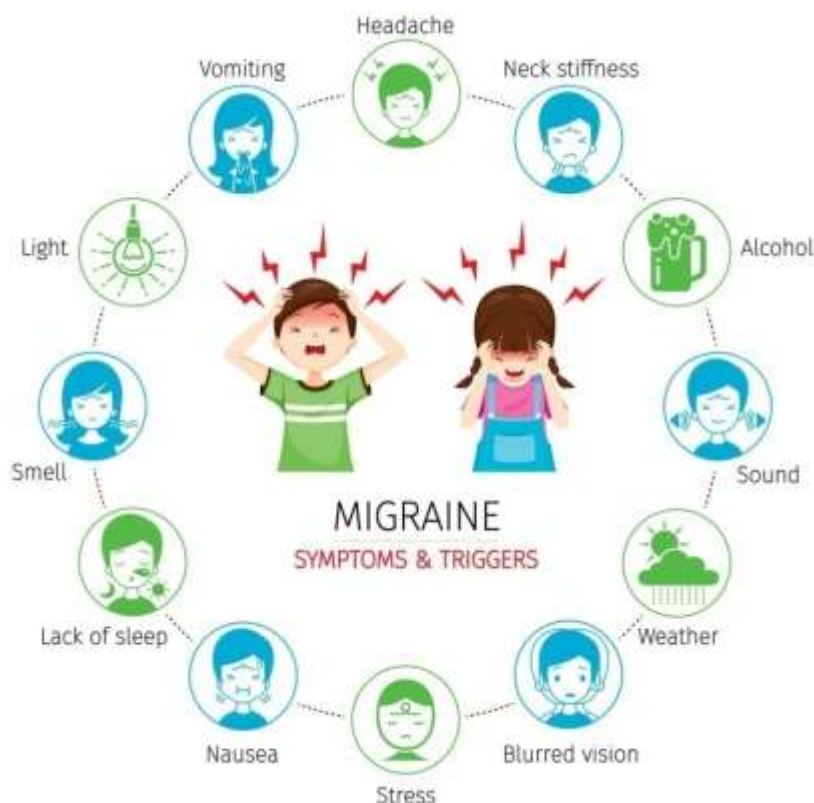
### 3] Attack

If left untreated, a migraine can continue anywhere from four to 72 hours, and the frequency varies from person to person. Migraines can hit once a month or numerous times a month.

#### Symptoms of Attack:

- Pain on one side of the head, but sometimes on both
- Throbbing or pulsing pain
- Light, sound, and sometimes smell and touch sensitivity
- Vomiting and nausea





*Figure 5: Symptoms and Triggers of Migraine [13]*

#### 4] Post-drome

You may feel fatigued, bewildered, and washed out for up to a day after a migraine attack. Some people claim to be elated. Pain may reappear if you move your head suddenly. [5]

#### Diagnosis of Migraine:

The medical history is the cornerstone of migraine diagnosis; with the help of a variety of published tools (see Diagnostic aids), a complete history should allow systematic application of the ICHD-3 criteria. Physical examination is usually sufficient, but other tests (such as neuro-imaging, blood tests, or lumbar puncture) may be required to confirm or rule out suspicions of secondary causes of headache.

Age at onset of headache; duration of headache episodes; frequency of headache episodes; pain characteristics (for example, location, quality, severity, aggravating factors, and relieving factors); accompanying symptoms (for example, photophobia, phonophobia, nausea, and vomiting); aura symptoms (if any); and history of acute and preventive medication use are all required in an adequate medical history. All are required for the ICHD-3 criteria to be applied. [6]

#### 1] Criteria for diagnosing

The International Headache Society published the ICHD-3 criteria, which define the clinical aspects that determine the diagnosis of migraine and its kinds and subtypes. Because these criteria place a premium on specificity over sensitivity, a separate set of criteria is provided for a diagnosis of probable migraine, which is described as "migraine-like attacks that lack one of the symptoms required to meet all criteria for a type or subtype of migraine." The term "probable migraine" refers to a diagnosis that is subject to confirmation during early follow-up. [6]

#### 2]Aids to diagnosis

Headache diaries are helpful diagnostic tools that can be used to re-evaluate the diagnosis at any time. Daily journal notes track the pattern and frequency of headaches, as well as any associated symptoms (such as nausea, photophobia, and phonophobia) and the use of acute medicines. Headache calendars, which often contain less information but are useful in the follow-up assessment of patients, should not be confused with diaries. Headache calendars should be used to keep track of migraine frequency, headache frequency and intensity, and headache-related events such as acute and preventive drug use, as well as menstruation.

The advent and refining of electronic pain diaries and calendars are significant advancements since they are anticipated to make obtaining more detailed information easier without jeopardizing compliance. Headache diaries can be difficult to keep track of, especially in basic care; for example, only 46% of patients with recurrent headaches completed one population-based study. [6]

### 3] Diagnosis variations

Other primary headache disorders and some secondary headache illnesses are among the differential diagnosis for migraine. Differentiating from other primary headache diseases is essential for optimal care, however differentiating from secondary headache disorders is critical since some of these disorders are significant and possibly life-threatening (for example, meningitis and subarachnoid haemorrhage).

The only other paroxysmal headache illness that affects the general population is tension-type headache (TTH). TTH is distinguished from migraine by the presence of bilateral, mild to moderate pain with a pressing or tightening sensation that is not exacerbated by ordinary physical exercise.

Cluster headache is a far less common main headache disease, affecting only about 0.1 percent of the population. It has a number of distinguishing characteristics, including repeated but brief bouts (15–180 minutes) of strictly unilateral headache of severe or very severe intensity. Ipsilateral cranial autonomic signs such as conjunctival injection, lacrimation, and nasal congestion accompany the head pain.

Medication-overuse headache (MOH) is a secondary headache disease that is an important differential diagnosis for persistent migraine. Overuse of acute medicine to treat migraine attacks is a typical cause of this illness, and the two disorders are frequently confused (see Step 8 for more on MOH). [6]

#### Treatment:

##### Allopathic treatment-

##### Painkillers :-

Although some over-the-counter (OTC) pain relievers are effective for migraines, many are only accessible with a prescription.

These medications, with the exception of acetaminophen, which is an analgesic that solely reduces pain, are non steroidal anti-inflammatory drugs (NSAIDs), which treat pain while also reducing inflammation:

- Acetaminophen
- Aspirin
- Diclofenac
- Ibuprofen
- Ketorolac
- Naproxen

Many OTC migraine and headache medications combine one or more of the substances listed above with a little quantity of caffeine, which can help them work faster and more efficiently, especially for moderate migraine headaches.

Long-term NSAID use may cause the following adverse effects:

- Stroke and heart attack
- Renal failure
- Ulceration in the stomach [7]

##### Ergotamines :-

The first class of medications used to treat migraines were ergotamines. They stimulate blood arteries around your brain to constrict, which can quickly cure a migraine.

Ergotamines come in the form of pills, sublingual tablets, nasal sprays, suppositories, and injections. They're usually given as soon as headache symptoms appear, with the option of taking extra dosages every 30 minutes if the headache persists.

Some Ergotamines are:

- Dihydroergotamine (DHE-45, Migranal)
- Ergotamine (Ergomar)
- Ergotamine and caffeine (Cafatine, Cafergot, Cafetrate, Ercaf, Migergot, Wigraine)
- Methysergide (Sansert)
- Methylergonovine (Methergine)



Ergotamines have potentially fatal adverse effects. They are hazardous in excessive concentrations and can cause birth abnormalities and heart difficulties.

Ergotamines should not be taken if you are pregnant, breastfeeding, or have heart problems. Other pharmaceuticals, such as anti-fungal and antibiotic treatments, can interact unfavorably with ergotamines. [7]

### **Triptans :-**

Triptans are a newer type of migraine medication that works by increasing serotonin levels in the brain, lowering inflammation and narrowing blood vessels, and thereby eliminating the migraine.

Triptans are a type of migraine medication that comes in the form of pills, nasal sprays, injections, and tablets that dissolve under the tongue and work swiftly to relieve pain.

Some triptans are:

- Almotriptan
- Eletriptan
- Frovatriptan
- Naratriptan
- Rizatriptan
- Sumatriptan
- Sumatriptan and Naproxen
- Zolmitriptan

Triptans may cause the following adverse effects:

- Drowsiness
- Tingling or Numbness in your Toes
- Dizziness
- Nauseousness, chest or throat tightness, or discomfort

Triptans should be avoided by anyone who have cardiac problems or are at risk of stroke.

When taken with other medications that boost serotonin, such as antidepressants, triptans can produce the potentially lethal serotonin syndrome. [7]

### **Anticonvulsants :-**

Anticonvulsants are medications that prevent seizures caused by epilepsy and other illnesses. They may also help to relieve migraine symptoms by soothing your brain's hyperactive nerves.

Some anticonvulsants include:

- Divalproex-sodium
- Gabapentin
- Levetiracetam
- Pregabalin
- Tiagabine
- Topiramate
- Valproate
- Zonisamide

Anticonvulsants may cause the following side effects:

- Nausea
- Vomiting
- Weight gain due to diarrhoea
- Sleepiness
- Dizziness
- Eyesight problems [7]

## Herbal treatment of migraine-

If you're one of the millions of people in the United States who suffer from migraines, you know that they're more than simply a headache. Migraines can be severe due to the tremendous throbbing, pulsating, and searing pain they cause. According to the Migraine Research Foundation, more than 90% of persons who suffer from migraines are unable to work or function normally during an attack.

The majority of migraine sufferers choose to take medication. Many people, on the other hand, are turning to alternative therapy including relaxation techniques and herbal cures.

Years before modern medicine, tribes all over the world devised herbal cures for migraine headaches and other typical migraine symptoms. Many of these herbal traditions have been passed down through the generations. Despite the fact that most herbal migraine therapies haven't been properly scientifically proven for efficacy, many are quickly gaining acceptance from the modern medical establishment. [8]



**Figure 6: Herbal treatment of Migraine [14]**

### 1] Feverfew (*Tanacetum parthenium*)

Feverfew (or "featherfew") has been used to cure a number of diseases since it was first utilized in ancient Greece in the fifth century B.C. Fever, edoema, and inflammation are some of these symptoms. In the first century, people used the herb to treat aches and ailments including headaches.

The plant is endemic to the Balkan Mountains, although it currently grows almost everywhere. Feverfew was traditionally used to treat headaches, insect bites, and various types of pain in Eastern European societies. Modern applications include the treatment of:

- Migraines
- Disorientation
- Inflammation
- Breathing difficulties

The leaves, flowers, and stems of feverfew are normally dried before use. Supplements and extracts are also made with this combination. The leaves are eaten uncooked in some cultures. [8]

### 2] Ginger (*Zingiber officinale* Herbs)

Ginger is a plant native to Asia's tropical regions. It has been utilized in Chinese herbal medicine for for 2,000 years. Since ancient times, it has also been used in Indian and Arabic medicine. Ginger has long been used as a treatment for:

- Headaches
- Stomach ache
- Symptoms of nausea, arthritis, and the flu
- Issues with the nervous system

Ginger's anti-inflammatory, antiviral, anti fungal, and antibacterial properties are widely proven. Furthermore, a 2014 study published in the Phytotherapy Research Trusted Source found that the advantages of ginger powder were comparable to those of sumatriptan, a commonly prescribed migraine medicine, but with fewer adverse effects. [8]

### 3] Butterbur (*Petasites hybridus*)

Butterbur can be found throughout Europe, Asia, and North America in wet, marshy environments. Butterbur acquired its name from the fact that people used the plant's leaves to wrap and preserve butter during hot weather. It's been utilized for a multitude of reasons throughout history. The herb was first employed as a skin ulcer treatment by the Greek physician Dioscurides. It's been used to cure a variety of ailments since then, including:

- Headaches
- Asthma
- Allergies
- Cough
- Fever
- Gastrointestinal problems
- General pain

To cure headaches and migraines, most butterbur herbal medicines employ its pure root extract, Petasites, in pill form. Petasites is helpful for migraine prevention when taken in 50- to 75-milligram doses twice day, according to a 2012 study published in Neurology Trusted Source, which backs up previous research. [8]

### 4] Peppermint

Peppermint is a hybrid between spearmint and water mint that grows in North America, Europe, and Asia. Peppermint leaves and essential oils are used in both medicine and cooking. It's used to relieve: In addition to headaches, it's also used to relieve:

- Spasms
- Toothaches
- Gastrointestinal problems
- Nausea

In liquid pill form, peppermint oil and its active component, menthol, are accessible. There are also tea variants available for convenient brewing.

When applied to the forehead and temples in a 10% solution, menthol was found to be beneficial at stopping migraine discomfort and easing nausea in a 2010 study published in the International Journal of Clinical Practice Trusted Source. [8]

### 5] Coriander seed (*Coriandrum sativum*)

The medicinal and seasoning powers of coriander seed have been used by people from all over the world for over 7,000 years. Coriander was praised for its capacity to treat a variety of diseases, including allergies, diabetes, and migraines. By pouring hot water over fresh coriander seeds and inhaling the steam, traditional Ayurvedic therapy relieved sinus strain and headaches.

The seed's therapeutic properties are mostly being studied for their potential to cure arthritis and diabetes. More research is needed to discover whether it is effective as a migraine treatment. The anti-inflammatory properties of coriander seed, on the other hand, may be beneficial for some migraine sufferers. [8]

### Conclusion:

Many herbs, herbal ingredients, and herbal formulae have been demonstrated to help prevent or treat migraines to varied degrees. Ginger (most clinically effective), cannabis, intranasal cayenne (best evidence), or Spanish lavender volatile oil could all be considered as first-line treatments for people with moderate migraines, especially if they choose to avoid medicines. While triggers are being identified and, if possible, eliminated, a variety of herbs could be explored for migraine prevention, including butterbur, Spanish lavender volatile oil, turmeric and fish oil, goshuyuto, citron, or Rectify Heaven Formula. Feverfew (with or without willow), ginkgo, and bushy mat-grass are less well-known for their anti-inflammatory properties. In people with more severe migraines, all of these treatments could be employed, although they're probably best used in combination with pharmaceuticals. Patients who have not reacted to several drugs, or who have responded poorly to multiple medications, could benefit greatly from these quite diverse therapy approaches. To get effective clinical results, it's often necessary to test one or more natural products while also eliminating triggers. Another compelling argument to consider clinical usage of the natural products described here is their safety and low cost. [1]

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