

## **Herbs & Migraines: A Simple Comparison**

by

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### **Migraines: A Simple Comparison**

Migraines take many forms in both acute and chronic conditions. Herbs, like Feverfew, Butterbur, Lesser Periwinkle, and Ginger can work as remedies in both arenas. This is a subject of great importance to me personally. I have suffered from chronic migraines for 12 years. I struggle with a baseline headache 24 hours a day 365 days a year and I have yet to find a “magic bullet”. While I do not believe there really is a “magic bullet,” I do believe that there is help available to migraineurs for this severe and debilitating disease. That help will come in the form of ancient plant medicine with a history of potent treatment for many diseases and ailments. While there are seven types of migraines, in this paper, I will explore the herbal remedies that greatly affect the pain and suffering that individuals feel during an acute or chronic attack.

### **Migraines: Definitions and Types**

A migraine is defined as a headache that presents as throbbing to the head. It generally affects either one side or the other but sometimes both. Stanbury (2005) noted that “Migraines are neurovascular phenomena that can occur frequently, such as several times a week or infrequently such as only once or twice a year.” They are of varying intensity and can be frequently accompanied by nausea, vomiting, visual disturbances, photophobia, sound sensitivity, among other experiences and symptoms.

There are primary and secondary headaches. Migraines are primary headaches. This is because they are from no other cause, such as another medical condition. It also means that there are no other blood tests or imaging for diagnosis. Migraines of both acute and chronic nature are difficult to manage. One causative factor for a migraine can be from the blood vessels in the head constricting and then opening quickly causing a migraine to form.

#### **Defining a chronic migraine**

Chronic migraine is diagnosed as fifteen or more headache days per month. Pain medication will be taken with chronic migraine during those days. This in turn can lead to more headaches from too much medication - a rebound migraine. The symptoms may change every time. The pain might change as well, becoming more debilitating. Pain medication sometimes does not work meaning that the headache lingers causing a migraine flare.

#### **Defining an acute migraine**

Acute migraine is an active migraine. Acute migraines are those that are happening currently. When a migraine is acute, it means that it requires an attempt towards immediate relief from the pain and other symptoms. Some symptoms may include sensitivity to sound, light, and smell, blindness in one eye, or both, tinnitus, nausea, body aches and pains, and others. An acute migraine may take 72 hours - or longer - to subside.

#### **Migraine Triggers**

Triggers are the stimuli that cause a migraine to start. “Migraines are often triggered by environmental factors, with 85% of migraineurs reporting triggers,” (Khalsa, 2007). Migraines start with vasodilation. Many things can start a migraine. It can be the smell of cigarette smoke or someone’s perfume. Sounds, temperature, intake of different food and beverage, stress, crying, yelling, and many more can set a migraine off for someone. Triggers are many and varied. Some sufferers may not be able to identify exactly what their triggers are. This is because there may be more than one occurring concurrently.

## Herbal Remedies

### Herbs for Chronic Conditions

Herbs can come to the rescue in the instance of a chronic headache. Some are meant for prophylaxis. Others are meant to knock out the pain within a short amount of time. Herbs meant for chronic circumstances are generally intended to work over time. They can also reduce the quantity and duration of headaches.

#### ***Tanacetum parthenium*: Feverfew**

*Tanacetum parthenium*, common name Feverfew, from the Asteraceae family of plants, is an herb for prophylaxis in a chronic migraine condition. Feverfew has been used for a very long time for the treatment and interruption of migraines. It is an herb that builds up and works over time. Sanchez (2013) notes that "...the herb is safe for long term use and is used suitably as such," *T. parthenium* has been studied in great detail for the prevention and reduction of migraine headaches. While there have been many studies on the use of *T. parthenium* (with mixed results), there has been some discrepancy in the dosages used for each trial. This leaves some doubt as to the accuracy of the studies showing little to no effect. As herbalists know, it's all in the dosing. (7Song, 2017) asserted that "While the studies had varied results (no surprise there) the tincture is a useful adjunct for migraines." *Tanacetum parthenium* is an incredible ally in keeping migraines at bay or at least minimizing them.

#### **Methods of action**

*Tanacetum parthenium* has many actions for migraines. *T. parthenium* has analgesic, anti-inflammatory, anti-neuralgia, and antispasmodic properties. These work in the long run when *T. parthenium* is used for prophylactic purposes. Many of the subjects in the studies were watched over a 6 month period of time. Clearwater (2018) posits that "The leaves and flowers (aerial parts) are used in the making of tinctures. This creates good results for migraine and inflammatory relief. Using the freshly harvested plant is very important for high potency,". Herbalists have discovered that chewing upon fresh leaves is a great option for people looking to relieve migraines. People that grow their own *T. parthenium* plants can eat 1 to 3 fresh leaves on a daily basis to prevent migraines. Again, this builds over time. It must be noted that the leaves may cause ulcerations of the mouth therefore must be eaten surrounded by a piece of bread or other food to prevent this from occurring.

Feverfew has been used since the time of Dioscorides (a Greek physician in AD 40-c.90) as a strong preventative for headaches. It has been found in other eras of Herbalism history also. "The English Herbalist, Nicholas Culpeper (1616-1654) prescribed it "for all pains of the head (Culpeper, 1787)," (Clearwater, 2018). Sadly, herbs became less important than pharmaceutical drugs. However, beginning in the 1970's scientists began to look at the benefits of Feverfew based on the research touting its potency for relieving migraine headaches. Unbalanced vascular circulation is one culprit for migraine headaches. *Tanacetum parthenium* is responsible for promoting circulation, shutting down inflammatory responses, and dissolving platelet aggregation, and "is especially indicated for migraine sufferers who hold excessive heat and inflammation in their body," (Clearwater, 2018). Heat can be a contributing factor for migraine.

It is a drying and warming herb. Bone and Mills (2013) found that "The pathophysiology of migraine is not fully understood; hence Feverfew's mechanism of action in migraine prophylaxis remains to be adequately defined." *T. parthenium*'s methods of action tie into the constituents of the plant.

#### **Constituents**

*T. parthenium*'s main constituents are sesquiterpene lactones - namely parthenolide and santamarine, volatile oils, flavonoids, and tannins. There are many sesquiterpene lactones - 30 found in the aerial parts of Feverfew - the most critical are parthenolides. The parthenolides are thought to be the constituents responsible for the reduction of pain and inflammatory response in the migraine mechanism. "Studies show that parthenolide decreases the body's release of inflammatory blood components and is antiprostaglandin, anti-arthritic, antispasmodic, anti-bacterial, and anti-neuralgia (reduces nerve pain). Parthenolides deter the process leading to abnormal blood clotting and tones vascular, smooth muscle (the muscle within the blood vessels).

The human body creates melatonin from serotonin which is "a calming inhibitory, neurotransmitter," (Clearwater, 2018). Sleep is critical for migraine sufferers. The lack thereof can cause a migraine to occur. Circadian rhythm is induced by Melatonin along with supporting the sleep function and can help calm chronic pain. Melatonin also eases the pain of migraines which is a neurological disorder.

An interesting note is, "A claim has also been made that Feverfew works for preventing headaches but is not effective treating a headache once it occurs. This is largely a dosage issue," (Frances, 2006). The constituents affect how the herbs alter migraines.

### **Effects**

After defining the methods of action and what the constituents in *Tanacetum parthenium* are, it is important to look at its effect on migraines. *T. parthenium* affects migraines in many ways. It reduces pain and inflammation. It is a long-term preventative to head off a migraine attack. It can also reduce photophobia and sensitivity to sound. *Tanacetum* also dilates blood vessels and breaks up platelet aggregation. Feverfew is a very useful migraine herb. It shares some of its characteristics with *Petasites hybridus* - Butterbur.

### ***Petasites hybridus*: Butterbur**

*Petasites hybridus* is another prophylactic herb for migraine. It is from the Asteraceae family of plants and its common name is Butterbur. The plant parts that are used are the leaf, root, and rhizome. It is important to note that *P. hybridus* has some controversy of use due to the pyrrolizidine alkaloids in the plant leaves. This tends to be present more in the young leaves with very little in the older leaves. It is another herb whose effect builds over time and supports migraine headaches in the long run. Quite a few different species have been used in relation to migraine relief so all species (spp.) are considered to be useful for migraine. However, the bulk of the research has been done on *P. hybridus*. It has been studied to be useful in not only the prevention of migraines long term, but also in reducing the frequency, length, and intensity of migraine headaches. *P. hybridus*' methods of action are many and varied.

### **Methods of Action**

*Petasites hybridus* has many methods of action which are useful in the treatment and prevention of migraines. The suggestion has been made that "...(it) has an affinity for cerebral blood vessels where *Petasites*' antispasmodic action on the musculature of blood vessels may play a significant role in mitigating the symptoms of migraines" (Frances, 2006). It is used as an anti-inflammatory and antispasmodic. It breaks up platelet aggregation. Nerve sedation and blood vessel dilation are other mechanisms of action. The actions of *P. hybridus* are the result of its constituents.

### **Constituents**

The constituents in *Petasites hybridus* are many and varied, being extracted and utilized for pain in most cases. Again, these constituents are best used as prophylactics. *Petasites hybridus* is utilized as a standardized extract for pain. It is standardized due to the inclusion of

pyrrolizidine alkaloids. It is critical to use pyrrolizidine alkaloid-free versions such as Petadolex™. PA-containing versions may cause liver damage. The adult leaves do not have any, or rather almost none. The standardized constituents are Petasin and Isopetasin. The standardized amount is 7.5 mg (Khalsa, 2007).” Moore (1993) asserts that “The sesquiterpene petasin and related esters, saponins, and mucilage in the leaves; resins and volatile oils in the roots,”. The roots do not seem to contain PAs. Butterbur performs as a sedative for the nerves, is anti-inflammatory, and dilates the blood vessels. It should be noted that, “If you have an acute condition without any pattern, other approaches are usually better; but if you have a chronic problem - and whenever you are out of balance with your food, become emotionally stressed, don’t get enough sleep, you have these early-warning pains - then the (Butterbur) approach is an excellent one,” (Moore, 1993). Thanks to its constituents, *Petasites hybridus* has many effects for the long-term treatment of migraine headaches.

### **Effects**

Through the use of Butterbur, migraine activity is greatly diminished which is directly tied to its constituents and methods of action. Khalsa (2007) acknowledged that “In scientific studies, consistent use of Butterbur produced significantly fewer migraine attacks, fewer migraine days, and a reduction in migraine pain. Two clinical studies demonstrated its effectiveness as a preventative treatment for migraines,”. Many scientific studies - double-blind placebo and otherwise - have borne out the effects that *Petasites hybridus* has on migraine pain and suffering. Its pain-relieving, antispasmodic, nerve sedating, anti-inflammatory actions have proven their effectiveness on the migraine mechanism. A comparison is required between *Tanacetum parthenium* and *Petasites hybridus* in order to look at their similarities and differences in prophylactic migraine prevention and treatment.

### **Compare *Tanacetum parthenium* and *Petasites hybridus***

Both *Tanacetum parthenium* and *Petasites hybridus* have proven their effects on the migraine mechanism and there does not seem to be much difference in outcome and usefulness. Their constituents do bear some comparison. They both have prophylactic effects and are best used on a long-term basis. Both are anti-neuralgia, anti-inflammatory, and antispasmodic. Both dissolve platelet aggregation. These herbs have both been studied at great length in the prevention and treatment of migraines. However, Feverfew has been studied longer while Butterbur is more recently on the radar of herbalists and scientists. *Petasites hybridus* appears to have a sedating effect on the nerves as opposed to blocking the nerve pain. As Michael Moore stated in 1993, “....(it) decreases the pain by nerve sedation....”. Both dilate blood vessels while *P. hybridus* appears to have an affinity for the cerebral blood vessels. Another difference is that *Tanacetum parthenium* reduces photophobia and sound sensitivity. That is not one of the actions of *Petasites hybridus*. Both herbs are efficacious for migraine prevention on a prophylactic basis. There are many similarities and a few differences in effects and actions.

### **Herbs for Acute Conditions**

Herbs for an acute migraine condition may share actions that perform in a similar manner to chronic herbs on the migraine mechanism. Their actions, constituents, and effects differ. They differ because their constituents perform in a way that makes their actions act faster than those of their chronic counterparts. As stated earlier in this paper, the author noted that *Tanacetum parthenium* did have similar actions on acute headaches and the dosing may have been insufficient to be useful in an acute manner. However, as stated by Moore (1993), its best action is in long-term usage. Herbs for acute migraine work on an immediate basis as long as the onset

of the headache is caught quickly enough. As we learn about the next two herbs we will be able to see their similarities and differences.

### ***Vinca minor*: Lesser Periwinkle**

*Vinca minor*, common name Lesser Periwinkle from the family Apocynaceae - the Dogbanes is the first herb for the discussion on acute herbal remedies. Lesser Periwinkle is known for its use internally in cerebrovascular disorders. *V. minor* is also an herb that pairs well with other herbs to support “.....disordered blood flow to the brain.....” (Marciano & Vizniak, 2015-2020). This herb pairs well with *Salvia rosmarinus* and *Centella asiatica*.

#### **Methods of Action**

Methods of action for *Vinca minor*, in the author’s opinion, are extremely helpful from a personal perspective. This has helped tremendously in my own journey with migraine. Sanchez (2013) maintained that “*Vinca minor*, lesser Periwinkle, is employed as a cerebrovascular stimulant...” It restores and increases blood flow to the brain allowing the blood vessels to dilate and therefore reduce pain. When there is a constriction in the blood vessels this may make pain occur. There is a juxtaposition with this herb, however. It is also a powerful capillary constrictor which means it can stave off hemorrhage. It’s a wonderful styptic if needed.

There is evidence that migraine may be related to a slight hemorrhage in the brain. The migraine mechanism is not completely understood therefore this is still speculation. Its traditional use is for cerebrovascular disorders “...and as a cerebral stimulant to increase the cerebral uptake of oxygen and glucose and support the metabolism of the brain,” (Marciano & Vizniak, 2015- 2020). It tends to make use of oxygen in the brain more efficient. Further, “The best specific indications I know of are sharp, left- or right-sided headaches, adrenaline-type stress, with pounding in temples upon standing suddenly. . ..”.(Moore, 1989).

#### **Constituents**

*Vinca minor* includes a couple of constituents that lead to this herb’s interruption of the migraine mechanism. A note: *V. minor* should only be used under the supervision of a professional (Sanchez, 2013). It is a drop dosage herb meaning use drops as opposed to dropperfuls or milliliters.

Vinpocetine is a constituent in *Vinca minor*. It is available in some countries as prescription-only and in some countries, it is accessible as a supplement. This is the constituent that is purported to increase blood flow and more efficient oxygen performance in the brain when incorporating *Vinca* in a migraine protocol. It was mentioned prior that the oxygen uptake is enhanced with the use of *V. minor*. Vinpocetine is the reason. It is also the reason that glucose is processed better in the brain. It is possible the brain may become more efficient overall with its use. “...(it) may have neurological effects that will inhibit the migraine chain-reaction” (James, 2009). Dr. Larry McCleary, a former acting Chief of Pediatric Neurosurgery at Denver Children’s Hospital has an “anti-migraine” cocktail including Lesser Periwinkle. Vinpocetine also has antioxidant properties which in turn, may make other antioxidants function better having an adjunct effect. One of the concerns with this particular constituent is some of its possible side effects - headache to name one - but also a drastic drop in blood pressure, which presents another reason drop dosage is critical with *Vinca minor*. On the upside, it may counteract dizziness which is a migraine symptom. *V. minor* has another primary constituent called vincamine. Vincamine is an Indole Alkaloid. Modulating effects on the brain is its claim to fame. “Vincamine is used as a cerebral stimulant and vasodilator...,” (Marciano & Nikita 2015-2020). Actually, by a slight change to a molecule, vincamine becomes vinpocetine. Due to the very strong constituents in Lesser Periwinkle, there are amazing effects to its credit.

### **Effects**

As stated prior, the effects of *Vinca minor* are noteworthy because it is a cerebral stimulant that assists the uptake of oxygen to the brain. It promotes the efficient use of glucose in the brain. “For one, better oxygen use in the brain could be a benefit. It also seems to allow for better glucose use,” (James, 2009). It inhibits the migraine-causing cascade before an attack begins. It is a vasodilator, expanding the blood vessels to assist the flow of blood to the brain. In a weird twist of fate, it is also a capillary restrictor and noteworthy styptic which can stave off hemorrhage. If migraine is a hemorrhage - which again the migraine mechanism is not understood therefore this is speculation - it will stop the bleeding in the brain. *Vinca minor* is an herb that modulates brain function which could also assist in the prevention of migraine. It works in synergy with other herbs enhancing its effect. It is a wonderful adjunct with other herbs and compounds.

### ***Zingiber Officinalis*: Ginger**

*Zingiber officinalis*, common name Ginger, is from the Zingiberaceae family of plants. “The rhizome is used in making the medicine that fights against acute migraine headaches,” (Frances, 2006). It is anti-inflammatory, reduces nausea, and settles the stomach. It is a peripheral circulatory stimulant. It has volatile oils, amongst other constituents, which make *Z. officinalis* a competent and useful ally and friend to migraine sufferers.

### **Methods of Action**

Ginger is known for arresting a migraine before it starts. “*Zingiber officinalis* is a standout for aborting an episode before the pain starts. When the first sign of an impending attack begins (the “prodrome”), stir 2 heaping Tbs. of dry ginger powder into a glass of water. Drink it down immediately. The attack will usually recede. If it begins again a few hours later, repeat the dose,” (Khalsa, 2007). With herbal dosing, the benefit is being able to dose in quicker succession than with pharmaceutical medicines. Pharmaceutical medicines require a specific interval between doses.

Ginger is also well known for easing ailments of the digestive tract - it prevents nausea, vomiting, and aids digestion. It is also anti-inflammatory. This is important because, “...Ginger naturally balances eicosanoid production and function. Eicosanoids are physiologically active compounds synthesized from the body from essential fatty acids, and when imbalanced can produce inflammation and a wide variety of disease conditions can evolve,” (Sanchez, 2013). *Zingiber officinalis* is an antispasmodic, decreases platelet aggregation, and reduces fever through sweating. Further, “Like other herbs used in the treatment of congestive headache, this action proves invaluable in relieving the congestion of blood to the head, as blood flow is restored to peripheral vessels,” (Frances, 2006). Dilation of blood vessels means diffusion of pain making the migraine lessen.

Ginger is an antiemetic. This is invaluable in fighting nausea and sometimes accompanying vomiting which accompanies some migraine attacks. “Ginger balances the formula containing Feverfew in its ability to allay nausea,” (Frances, 2006). Ginger has the ability to prevent nausea once it’s started. However, the magic is in the prevention. The use of *Z. officinalis* is well known in relation to arthritic, joint, and muscular pain. It promotes blood flow to the peripheral areas of the body. All of *Z. officinalis*’ mechanisms of action can be traced to its constituents.

### **Constituents**

Ginger has many powerful constituents. Sanchez (2013) asserted that “Its constituent profile includes shogaols (not in fresh rhizome) and gingerols, which are phenols; Zingibin, an

enzyme; and Capsaicin, and Curcumin.” The gingerols and shogaols are responsible for anti-inflammatory responses in the body. The volatile oils in *Zingiber officinalis* have an antispasmodic effect and “...inhibits platelet aggregation and prostaglandins and leukotrienes associated with inflammation,” (Marciano & Nikita, 2015-2020). *Z. officinalis* works on circulation to the periphery. This works especially well in the case of rheumatism - another severe pain response. Ginger’s constituents are versatile and extraordinary. They are responsible for many different facets of *Zingiber officinalis*’ actions in the body. “Anti-inflammatory protease activity combined with inhibition of certain inflammatory prostaglandins, thromboxanes, and leukotrienes provide pain relief by decreasing inflammation,” (Frances, 2006). Tilgner (2020) noted that “Research has shown repeatedly that ginger modulates biochemical pathways activated in chronic inflammation. It inhibits the production of prostaglandins which cause physical pain.” Inflammation is a key factor in the migraine mechanism. *Z. officinalis* is a powerful anti-inflammatory based on its constituents. *Zingiber officinalis* has many effects on the body based on its constituents.

### **Effects**

The effects on the body from the support of Ginger are critical in the case of reducing an acute migraine response. Due to its actions and constituents, *Z. officinalis* has important anti-inflammatory and antispasmodic effects. It reduces platelet aggregation - a large factor in the migraine mechanism. Prostaglandins create pain in the body and Ginger inhibits the production of prostaglandins in the body, therefore, reducing pain. The response is immediate, making Ginger a major player in the reduction of pain in migraine activity in the brain. It is important however to look at the similarities and differences between *Vinca minor* and *Zingiber officinalis*.

### **Compare and Contrast *Vinca minor* and *Zingiber officinalis***

*Vinca minor* and *Zingiber officinalis* both have strong constituents promoting migraine pain relief. Ginger’s reaction to nausea is unsurpassed in its ability to settle the stomach and mitigate nausea. Lesser Periwinkle has a major effect on oxygen uptake in the brain and cerebral stimulation. Both have an anti-inflammatory response. Both interrupt migraine response. The similarities end there. *V. minor* supports the more efficient use of glucose in the brain and again it promotes oxygen uptake to the brain. Ginger has the added benefit of being an antiemetic. Nausea can be a debilitating symptom that comes with an acute migraine attack. *Z. officinalis* breaks up platelet aggregation and *V. minor* makes the brain chemistry more efficient, which possibly can affect the migraine mechanism. It also interrupts the cascade of the migraine mechanism, possibly shutting it down before it even starts. *Vinca minor* may also have some nasty side effects including a dangerous drop in blood pressure. It is a chemotherapy drug where *Zingiber officinalis* is not. These two side effects make Lesser Periwinkle an herb that must only be used in drop dosages and under the supervision of a professional practitioner. Both *V. minor* and *Z. officinalis* are strong players in reducing migraine headaches in acute conditions and can be synergistic.

### **Summary and Conclusion**

There are seven different types of migraines and they present in both acute and chronic conditions. Feverfew and Butterbur are herbs that are recommended in chronic conditions. Lesser Periwinkle and Ginger are recommended in acute conditions. However, it is important to remember that acute conditions may overlap chronic conditions making all four herbs necessary in the treatment of migraine headaches. Exploring these four herbal remedies has given me greater insight into my own journey as not only an herbalist but also a migraineur. I have found this exploration informative for my own pain and suffering. It is my hope that this paper sheds

light on the ways these four amazing plant allies can assist people who endure the pain and suffering of migraine as well.



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