Natural Approach to Migraine Headaches
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28 million Americans suffer from migraine headaches. Migraines account for an enormous loss of time from work, school and daily activities. A significant majority of patients report severe disability due to migraine headaches. 80% of the patients rate the debilitating headaches as severe, 23% have sought emergency room treatment and 39% have pain so severe that they are bedridden for days. Since 1989 to the present the prevalence of migraines has been the same despite the advances in medical technology. There are currently many approaches for treating migraine headaches that are not as effective as one would imagine. The holistic approaches in treating migraine headaches must include lifestyle and psychosocial modifications, dietary changes, nutritional balances and proper therapeutic approaches. This can be accomplished by avoiding migraine-triggers such as foods and certain food additives, taking herbs such as Tanacetum parthenium, Petasites hybridus and Zingiber officinalis, supplements such as 5-HTP, calcitonin, essential fatty acids, riboflavin and magnesium.

Migraine headaches affect nearly 28 million Americans, which means 1 out of every 4 households. Left untreated, migraines cause a significant reduction in the quality of life for the migraine sufferers. Migraines account for a remarkable loss of time from work, school and daily activities. 51% of migraine sufferers report a 50% or more reduction in work and/or school productivity; 66% report a 50% or more reduction in household work. A significant majority of patients report severe disability and the need for bed rest due to an inability to control the pain and symptoms of the migraine headaches. The debilitating headaches are rated as severe in 80% of the patients, and 23% have had to seek the emergency room for treatment; 39% have pain so severe that they are bedridden for days.1

Total US prevalence of migraine headaches was virtually the same in 1999 as it was in 1989 (12.6% vs. 12.1%). Even though there has been significant advances in prescription medications for migraine treatment, 57% of patients still only use over-the-counter medications for treatment which is almost the same as 10 years ago when 59% of patients were using only OTC medications.2 Despite better understanding of migraine headaches and medications designed specifically for the treatment of migraines, many people continue to suffer from unnecessary pain and disability. Migraines may occur at any age, but are usually between the ages of 10 and 30 years old. Migraine headaches are more common in women than in men.3

Migraine headaches can be classified into three different types: the common, classical and complicated. With the common migraine, the pain is frontal, unilateral or bilateral. It usually only involves one area, and can last for one to three days.4 The pain is usually unilateral in the classic migraine and can last anywhere from two to six hours. The pain and duration of the headache is unpredictable in a complicated migraine headache. The classical and complicated migraine headache both have an aura.5 The aura, which precedes the headache generally, includes scintillating scotomas, other visual field defects, paresthesias, restlessness, anxiety, anorexia, fatigue, irritability, or depression. Within a few minutes, the headache begins, throbbing and pounding, very severe, accompanied by photophobia and nausea and/or vomiting. The migraine headache occurrence is variable and it may strike every day or only once every several months. If left untreated the attacks can last from hours to days.

The exact cause of the migraine headache is unknown. However, there are many theories on the causes and many known triggers to the migraine attacks: 1) It may be due to regional alterations in cerebral blood flow. Studies measuring brain blood flow have shown a reduction of blood flow prior to a migraine attack. This is followed by an increase in blood flow that can persist for more than 48 hours.6 2) Studies have shown a difference between platelets of migraine sufferers and those without migraines. These differences include structural composition, increase in platelet aggregation, and serotonin release.7 3) The nervous system may play a role in the development of migraine headaches. It has been found that nerve cells in blood vessels of the migraine patient release a compound called "substance P." Substance P triggers pain and its release into the arteries is associated with the dilation of blood vessels and the release of histamine and other allergic compounds.8 The prodromal symptoms that can be seen in a migraine may be due to the intracerebral vasoconstriction, and/or some suggest the head pain is due to substances released by the dilation of the scalp arteries. 4) Migraine headaches can be a result of serotonin deficiency. It was found that during migraine attack there is an increase in the serotonin breakdown product 5-hydroxyindoleacetic acid (5-HIAA) in the urine.9,10 The factor responsible for the increased serotonin breakdown is an increased activity of monoamine oxidase (MAO).11,12 The lower levels of serotonin leading to lower pain thresholds in patients suffering from chronic headaches, is supported by over 5 years of research with positive clinical results in double-blind studies with the serotonin precursor 5-hydroxytryptophan (5-HTP).13,14 5) Nutritional imbalance including nutritional deficiencies is an immense consideration in migraine headaches. Also, a commonly known trigger of migraine headache is food and certain food ingredients. The following is a list of common triggers of migraines:15,16
• Alcohol
• Tyramine: aged cheeses and fermented foods
• Aspartame (artificial sweetener)
• Caffeine
• Phenylethylamine (present in some OTC and chocolate)
• Foods prepared with monosodium glutamate (MSG) for example Chinese food, processed or frozen foods
• Nitrates (preservatives used in sausage, bacon, and lunch meats)
• Citrus foods and products
• Cow's milk
• Eggs
• Corn
• Soy

Other factors hypothesized to cause migraine headaches include 6) hormonal influences such as menstruation, ovulation or ovarian cyclic disorders.17 7) Drug-induced migraine headaches caused by the side effects from taking a drug for the headache or other medications. 8) Musculoskeletal problems including TMJ, poor posture or spinal misalignments. 9) Lifestyle factors such as stress, sleeping habits or missing a meal. And last of all, 10) Changes in the environment including exposure to chemicals such as household cleaning products, strong odors such as perfumes, overhead blinking lights, noise and changes in the weather.18

What are the treatments for migraine headaches? Are there other alternatives for treatment of migraines besides drugs?
Pharmaceutical drugs for migraine headaches are numerous and so are the side effects. The drug treatment ranges from mild pain relievers such as ibuprofen (Advil, Nuprin), aspirin (Bayer, Ecotrin) or acetaminophen (Tylenol, Temptra), to stronger pain relievers such as codeine. If the headaches are not responding to ordinary painkillers other drugs including ergotamine preparation,10 beta-blocker propranolol (Inderal), butorphanol (Stadol), calcium channel blockers or sumatriptan (Imitrex) may be prescribed.

Sumatriptan (Imitrex) is a serotonin agonist and works by increasing serotonin levels in the brain. Serotonin is involved in the constriction of blood vessels—a component of migraine headaches is due to a disturbance in circulation to the brain, increasing serotonin levels can help to restore the balance in the tension of the blood vessels. However, sumatriptan is expensive and can produce side effects such as increased heart rate, elevated blood pressure, and a feeling of tightness in the chest, jaw or neck.20

Herbal medicine has been used in treating ailments for centuries, so it is not surprising that treating migraine headaches with botanicals is not only effective but eliminates the side effects that pharmaceutical drugs have. One of the most popular studied herbs for migraine headache is Tanacetum parthenium (Feverfew). Feverfew has been used anciently for a wide variety of conditions which can be classified into three main groups, 1) treatment for fever, headache and migraine, 2) difficulties in labor, threatened miscarriage, and regulation of menstruation and 3) relief of stomachache, toothache and insect bites. Current use of Feverfew is against headache, relief in arthritis and the treatment of psoriasis.21

There have been many studies to prove the effectiveness of Feverfew in treating migraine headaches. A questionnaire was completed by migraine sufferers that had tried Feverfew, and it was concluded that Feverfew was effective in providing significant benefit in the group.22 In a study, published by the British Medical Journal, the efficacy of Feverfew as a prophylactic treatment in migraine headaches was shown. Seventeen patients who ingested Feverfew fresh leaves daily as prophylaxis against migraine participated in a double-blind placebo-controlled trial of the herb: 8 out of the 17 patients continued to receive capsules containing freeze dried feverfew powder and 9 placebo. Those receiving placebo had a significant increase in the frequency and severity of headache, nausea and vomiting. The group given the capsules of feverfew showed no change in the frequency of severe symptoms of migraine. This provided evidence that if taken prophylactically Feverfew prevents migraine attacks.23

Feverfew is rich in sesquiterpene lactone. Several biological active members of this group have been isolated—some are spasmolytic so that they make smooth muscle less responsive to endogenous substances, such as norepinephrine, acetylecholine, bradykinin, prostaglandin, histamine and serotonin. The antagonist properties of Feverfew are consistent with an antimigraine effect due to the inhibition of the influx of extracellular calcium into vascular smooth muscle cells. This is the same reason that calcium channel blockers can be effective in migraine prophylaxis. Investigators believe that aqueous extracts of Feverfew inhibit the activity of the purified human platelet phospholipase A2 or it may have an effect on activation protein kinase C. It has been recently shown that Feverfew extracts inhibit various white cell activities in addition to their secretion.24,26

What are the side effects or are there any contraindications to taking Feverfew? Genotoxic effects have been examined but none have been found.27 There have not been any reports of serious adverse effects from taking Feverfew. Minor side effects reported include mouth ulceration, abdominal pain or an occasional case of contact dermatitis by handling feverfew. However, unlike more studies are done, Feverfew should not be given to children or taken during pregnancy or lactation.28

Recent studies indicate that Petasites hybridus (Butterbur) offers relief to migraine sufferers. Butterbur is another ancient herbal remedy. The leaves and rhizomes have been used in the past for treating spasm of the digestive tract, bronchial asthma and whooping cough; as an analgesic, cardiotoxic, diuretic, diuretic, and topically as a poultice to speed the healing of wounds and skin eruptions.29 Butterbur’s active ingredients, petasin and isopetasin, are responsible for the antispasmodic effects. Petasin and isopetasin effects include: 1) reducing spontaneous activity and spasms in the smooth muscles, including the vascular walls; and 2) acting on the arachidonic acid cycle by inhibiting leukotriene synthesis to provide an anti-inflammatory effect.30 The mechanisms of action of butterbur preparations (the action on arachidonic acid metabolism and the inhibition of leukotriene synthesis) are similar to those of other migraine medications.31

A German-based pharmaceutical company, Weber & Weber, has manufactured the first standardized butterbur root extract in which concentrations for pyrrolizidine alkaloids are below limits of detection.32 This preparation is called Petadolex. (Pyrrolizidine alkaloid has shown, in high concentrations, to be a carcinogen. In contrast, some research indicates Butterbur root may contain cancer-inhibiting substances.) Petadolex was tested and proven effective against migraines. Results showed that 1) migraine sufferers for the first time experienced longer intervals between attacks and a reduction in attack intensity.33 2) In a randomized, placebo-controlled, double-blind clinical study in which after a medication free 4-week baseline period, patients received two 25 mg Petadolex capsules or placebo twice daily for 3 months. Results showed that patients in the Petadolex group had a significant reduction in the frequency of migraine attacks after 4 weeks of treatment to the end of the study, compared to the placebo group. Patients receiving Petadolex had significant reduction in the number of migraine days per month after 12 weeks of treatment, compared to the placebo. The Petadolex group experienced significant reduction in the frequency of some symptoms; nausea; turning pale; lack of appetite; and hypersensitivity to noise, smell and light.34,35

The study also revealed that the drug had an absence of side effects.

Zingiber officinalis (Ginger) has been shown to be effective against inflammation and platelet aggregation.36,37 A 1990 article describes a patient who had suffered with a long history of migraines, who discontinued all medications for a 3-month period prior to a trial of ginger. The patient took 500 to 600mg of dried ginger mixed with water at the onset of a migraine and repeated dosage every 4 hours for four days. Improvement was noted within 30 minutes of the Ginger and there were no side effects. The migraines became less frequent and at a lower intensity after the patient used raw, fresh ginger daily in the diet.38

5-HTP (5-hydroxytryptophan) is as effective as other pharmacological agents used in preventing migraine headaches. It is also safer and better tolerated. 5-HTP is a serotonin precursor. The effects of 5-HTP on the serotonin system are extremely complex because of the multiple types of serotonin receptors. It is thought that in the use of 5-HTP the higher levels of serotonin produced over time decrease the sensitivity of the 5-HT1a receptors and increases the sensitivity of the 5-HT1a receptors.39 As a result, by increasing
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serotonin levels there would be a lower tendency to experience headache. One of the key pieces to support this concept is that 5-HTP is more effective over time (better results are shown after 60 days of use than at 30 days). In addition, 5-HTP also increases endorphin levels. This is effective because endorphins are the body’s own pain-relieving and mood-elevating substances. Usually, it is found that endorphin levels are low in migraine sufferers.30

There is evidence that cerebral blood flow is reduced in the prodromal phase of migraine and increases during the headache phase.14,43 It has been pointed out that calcium ion concentration in vascular smooth muscle is an important factor in promoting vascular constriction and that a decrease in intracellular calcium ion concentration is probably the most important element in promoting vasodilation.44 Since contraction of vascular smooth muscle depends on transmembrane calcium flux, agents which counteract calcium influx into vascular smooth muscle cell might be useful for preventing the initial spasm of cerebral arteries. An example of this is calcium channel blockers, which have been found to be effective for the prophylaxis of migraine.50-58 Calcitonin is a calcium-regulating hormone secreted by the C-cells of the thyroid gland. A well known effect of calcitonin is to lower plasma calcium by inhibiting osteoclastic bone reabsorption.59 It can be postulated that calcitonin can be effective in blocking the migraine cascade, by preventing the initial cerebral vasospasm. The effectiveness of synthetic salmon calcitonin in preventing migraine attacks was demonstrated by a double-blind, placebo-controlled, cross-over study with ten women who had histories of migraine attacks with a diagnosis of classic or common migraine. The patients filled out a standard card with number, duration and severity of migraine attacks every day. The results concluded that calcitonin is effective for prophylactic treatment of migraine.59

Nutritional imbalances play an important role in the development of migraine headaches. Nutritional imbalances to be considered in migraine sufferers include essential fatty acids (EFAs), riboflavin and magnesium. The role of EFAs in the prevention of a migraine should be mentioned. Platelet aggregation and arachidonic acid metabolites are of significance in the mediation of the events leading to the prodromal reduced blood flow to the brain of the migraine sufferers. It has been shown that reducing the intake of animal fats and increasing the consumption of fish will significantly change platelet and membrane EFA ratios and decrease platelet aggregation.50-55

Studies show that riboflavin is effective against migraine headaches. One theory is that migraine headaches are caused by a reduction of energy production within the blood vessels of the brain. Riboflavin has the potential of increasing cellular energy production, and to have preventive effects against migraine.54 This theory was tested on 55 patients suffering from migraine headaches. They were given large doses of riboflavin (400 mg daily) for at least three months. Overall, improvement after therapy was 68.2% in the riboflavin group. No serious side effects occurred in the riboflavin group, only minor adverse events, which were diarrhea and polyuria. The results from this study suggest that high-dose riboflavin could be an effective and low-cost preventive treatment of migraine.55

Low levels of magnesium play a significant role in migraine headaches. Low brain and tissue magnesium concentrations have been found in migraine patients, pointing out a need for magnesium supplementation, since one of magnesium’s key functions is to maintain the tone of the blood vessels and prevent reversibility of nerve cells. Other studies have found: 1) increased platelet cyclic AMP in patients with migraines is related to alteration of neurotransmitters in the platelet,56 2) lower magnesium content in mononuclear cells could indirectly indicate the reduction of brain magnesium concentration,57 3) low red blood cell magnesium levels could be a peripheral expression of the reduced brain magnesium concentration58 and 4) lower levels of serum and salivary magnesium.59

The importance of magnesium in the pathogenesis of migraine headaches has clearly been established by a large number of clinical and experimental studies. Magnesium, along with its vasorelaxant properties, lessen nerve excitation and have antiplatelet capabilities and it may be that magnesium concentration has an effect on serotonin receptors and nitric oxide synthesis.60 The effectiveness of magnesium was demonstrated in a double-blind study with 81 patients suffering from recurrent migraines. They were given either 600 mg of oral magnesium a day or placebo for 12 weeks. At 9 weeks, the migraine attacks were reduced by 41.6% in the magnesium group and 15.8% in the placebo group. The number of days with migraine and drug consumption for symptomatic treatment per patient also decreased significantly in the magnesium group.61,62 Infusion of magnesium results in a rapid and sustained relief of an acute migraine attack. In fact, in September 2000 issue of Science News Dr. Alexander Mauskop has shown that 80% of patients responded completely to the treatment and had no headache pain within 15 minutes of the infusion.63

Magnesium supplementation may only be effective in individuals with low tissue or low ionized levels of magnesium in the serum. It is common to see low tissue levels of magnesium in patients who suffer from migraines, but most cases go unnoticed because physicians will rely on serum magnesium levels to indicate magnesium levels. Serum magnesium is a very unreliable indicator, because most of the body’s store of magnesium lies within cells, not in the serum. A low magnesium level in the serum reflects end-stage deficiency. Sensitive tests for magnesium status include the level of magnesium within the red blood cell (erythrocyte magnesium level) and the level of ionized magnesium (the most biologically active form) in the serum.64

Magnesium bound to citrate, malate, or aspartate is better tolerated than inorganic forms such as magnesium sulfate, hydroxide, or oxide, which tend to produce a laxative effect.65 Breaking down the dosage into three parts and taking it at different times during the day will help decrease the laxative effect. It is best to take at least 50 mg of vitamin B6 daily because it has been shown to increase the intracellular accumulation of magnesium.66 Natural magnesium in water (magnesium carbonate dissolved in CO2-rich water) is 30% more bio-available than magnesium in food or pills, and offers a greater cardio-protection.67

Other treatments for migraine headaches include homeopathy, acupuncture, biofeedback, massage, aromatherapy, applying tiger balm topically on frontal and occipital area, yoga, meditation, electrotherapy, exercise, manipulation or cognitive-behavioral therapy which improves problem-solving and coping skills.68

Keeping a migraine diary is one of the best ways to pinpoint migraine triggers, whether it’s food or something else. Use a notebook to keep track of migraine information, and make sure you record.69

• The date and time of your headache.
• The symptoms you had not only during the migraine but also before and after.
• A description of the pain, its location and how severe it was.
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- The treatment you used and was it effective.
- What is your dietary intake.
- Activity level.
- Any changes in lifestyle that took place near the onset of the migraine.
- Any exposure to chemicals, perfumes, etc.
- Emotions: stress level, anger, depression, etc.

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