MWSHS Student Newsletter

Autumn 2025

MWSHS Alumna Profile

Kelly Wood

"For about 15 years, I wanted to become an herbalist, but just finding books and reading them was not cutting it," Kelly Wood informed us, explaining further: "There was so much information and I knew there had to be schooling. After doing research into schools across the country, I came across Midwest School of Herbal Studies. The director, Matthew Alfs, had a list of credentials and the School was in my area. Also, comparing the curriculum and finding the additional option for studying Asian Herbalism really solidified my choice."

And so, in November 2023, Kelly enrolled in MWSHS' Master-Herbalist Diploma Program. "It was overwhelming at first," she explained, "but talking to other students at the classes that are taught in person (assessments, plant walks, tincture making) really helped keep me on track. Once I found my stride, there was no stopping me, and I could not get enough!" Indeed, Kelly sailed through the Western-Herbalism module and graduated in July of this year, with a very high grade.

Like so many of our students, Kelly has been appreciative that, as she expressed it, "the course is self-paced and not just online, but there are books to read and reference. I still reference all the material today and know that it will be something that I will continue to do as my career as an herbalist grows." Still, we wondered how Kelly managed to make such fine progress, and here she explained: "The best advice I got, which was from a recent graduate, was to highlight the key words for the questions in the lessons so that, as you are progressing in your reading, you can then best answer the questions. I also found a nice cozy space, brewed a cup of tea, and just read." Reflecting on her journey with MWSHS, Kelly shared these thoughts: "Every part of this process to me has been joyous and especially the closeness I now feel with the wildflowers and plants around me, as I know they are there to help and to heal."

What are Kelly's current interests and goals? "I dry and tincture herbs for family and friends. I am dabbling in salves, but I still have to get the hang of those. I'm still working on getting my Master-Herbalist diploma and my goal is to have that by June of next year. Someday, I would like to open an herbal practice, focusing on women's health and underserved (*Continued in Column Two*.)

Recent Graduates

We offer congratulations to the following recent graduates of the Western-Herbalism module.

Kristi Schneider
Catherine Orth-Gunderson
Jenny Morrison
Tom Pothen
Kelly Wood

We offer congratulations to the following recent graduate of the Asian and Integrative modules.

Tom Pothen

We very much look forward to hearing more from these graduates as they continue to apply what they have learned in their lives!

MWSHS Profile of Kelly Wood, *continued*

communities that our. modern medical community has failed. I want to assist people in finding whole health and not just treat the symptoms. I want to understand, listen, and learn from each person while helping them to feel healthy and vibrant. Also, I would like to have a small herbal farm to help others with plant identification and to produce my own herbs for clinical practice and for sale. (Currently, I just have a small garden bed in my back yard, where I grow different healing plants. My goldenrod has taken over, as is in its nature to do!) I will also be learning and growing with the knowledge I have gained and will hopefully find ways to teach and to guide others who would like to learn herbalism."

We asked Kelly if she had any advice that she would like to share with MWSHS students, upon which she related the following: "As you are studying, go out for plant walks—those offered by the School and by other herbalists and foragers. They help so much to understand and to connect with what you are learning. Go to a conference—get out there. (I went to my first conference in May and was so scared because I felt so new, but conferences are vital to new herbalists and old in order to connect with each other and to learn from each other). Read, explore, and sit with the herbs and mushrooms about which you are learning. Listen to what they have to say, because you may discover a secret that we have long forgotten."

Inside This Issue

WORKSHOP CREDIT OPTIONS

Except where noted, all of the below-listed events qualify as Workshop credits toward the Master-Herbalist program. Each hour of *verified* attendance (e.g., per instructor-completed workshop-credit slips as supplied by MWSHS) counts toward an equivalent hour of Workshop Category #3 credits (up to the student limit of 20 hours), unless another category is specified or unless one attends a particular workshop at one of these events that is *strictly* in one of these other categories.

"Where Do I Find Qualifying Workshops in My Local Area?"

Aside from the *MWSHS Student Newsletter*, which lists resources from around the country of which we become aware, you can check holistic newspapers that are available in many larger cities. In these areas, as well as in less populated communities, you might check local, independently-owned health food stores and food co-ops, which may have bulletin boards or knowledgeable staff who may be aware of local teachers of holistic-assessment skills, herbal-medicine-making, or who may lead wild-plant walks. (Local nature centers, plant nurseries, greenhouses, horticultural clubs, and native-plant-appreciation societies may know of local wild-plant-walk instructors as well.) Finally, check the phone book for local naturopaths, herbalists, acupuncturists, and other holistic-health professionals who may be willing to mentor you on some of these skills or allow you to "shadow" them as they see clients.

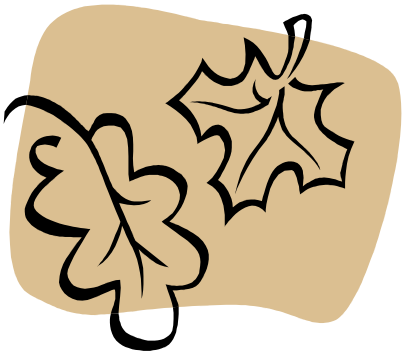
Workshops, Conferences, Lectures, & Events in Herbal Studies Across North America

BotanicWise (MidAtlantic Women's Herbal Conference). *Sept. 26th - 28th, 2025*, in Kempton Community Center**, Kempton, PA**. For more info, see the website at www.botanicwise.com, under "Events."

Wild-plant and mushroom foraging classes are offered by **Four Seasons Foraging,** through October. These qualify for our Wild-Plant Walks workshop category. Their website is www.fourseasonsforaging.com/events

Florida Herbal Conference, *March 14th, 2026*. **Orlando, FL.** For more info: www.floridaherbalconference.org

4th Ojai Herbal Symposium, *May 30th-31st, 2026*. Krotona Hill, near **Ojai,CA**. For more info: https://ojaiherbal.org/home-2023/



The Healing Power of Crabapples

by Matthew Alfs, MH, RH(AHG)

Apple consumption has long been associated with health. We've all heard the adage: "An apple a day keeps the doctor away." Not surprisingly, nutritional analyses of apples have revealed a vast amount of nutrients and other beneficial compounds, as we will see below.

Scientific research into the health benefits of apples has been most revealing. For example, a 2015 study in *JAMA Internal Medicine* found, via a crude analysis, that among 8,728 adults surveyed who consumed at least one apple a day, doctor visits were fewer than among those not so consuming. Of especial note was that the apple consumers were also on fewer prescription pharmaceuticals—thus "keeping the pharmacist away." This latter finding held true even in an adjusted analysis considering socioeconomic and health-related characteristics.[1]

Just four years later, a randomized, controlled, crossover study found that eating *two* apples a day provided superior health benefits to eating just one a day—improving cardiometabolic biomarkers in adults with elevated cholesterol levels.[2] The following year, another study that also looked at consumption of two apples a day found that urine and plasma samples of consumers revealed that such an intake modulated human microbiome co-metabolic processing of polyphenols, tyrosine, and tryptophan.[3]

Crabapples belong to the same genus, *Malus,* as the apples we buy at the supermarket, but are simply smaller. They generally contain the same nutrients and other compounds as regular apples. Notable among these phytochemicals are vitamins B_5 and C in high amounts, polyphenols, pectin, lipids, soluble sugars, microelements, organic acids (esp. malic acid), amino acids, flavonoids, and terpenoids.[4,9] However, there has been a wider application of crabapples in various streams of natural medicine than there has been of the apples that people typically eat, despite the former's less appealing taste to most consumers.

In Traditional Chinese Medicine, for instance, crabapples have been used in healing for many centuries. The ancient texts say that, when ingested, the crabapple enters the lung, heart, and liver meridians. The Chinese crabapple, *Malus hupehensis*, while still green, is believed to have a cooling effect on the body and therefore has been used to clear heat. The Siberian crabapple *(Malus baccata*) has been utilized to treat diarrhea, sore throat, and certain diseases of the liver, while a paste has been applied to the forehead to reduce headache.[5] In Spain, the crabapple species (*Malus sylvestris*) found at the edge of mountainous forests has traditionally been used to heal inflammatory conditions of the skin, warts, rheumatism, and diarrhea, and to serve as a digestive regulator.[6]

The revered American herbalist Tommie Bass similarly observed that crabapples were "good for the stomach."[7] The Haisla and Hanaksiala peoples of Canada found that eating crabapples after a long day of hunting "kills poison in the muscles."[8] (This may be due, at least in part, to the high content of malic acid, which is also available on the supplement market and used by natural practitioners to relieve myofascial pain.)

Scientific research has identified antioxidant, anticancer, lipid-lowering, anti-diabetic, and anti-inflammatory effects from crabapples.[9] Crabapple flowers are rich in the flavonoid kaempferol, which has shown potent activity against the bacterium *Helicobacter pylori*, responsible for several gastric disorders, including ulcers and stomach cancer.[10]

Although most crabapple trees produce red fruit, there are several species producing yellow fruits (e.g., see the photo below), including three here in the upper Midwest, where MWSHS is located. These include two native species, the American crabapple (*Malus coronaria*) and the prairie crabapple (*Malus ioensis*), as well as a

species that often spreads from cultivation, the Siberian crabapple *(Malus baccata*), mentioned above. The fruits of these trees vary in taste—from tolerable to palatable.

I have seldom encountered yellow crabapple trees in my outdoor wanderings. However, one particular encounter was most welcome, as it resulted in a powerful healing experience. For background here, I used to experience flare-ups of an undiagnosed psoriasis-like skin condition on rare occasions, especially during times of high stress. The year 2015 was an especially stressful year for me, due to my mother's death and the resultant need to care for my ailing father. And so, in the fall of that year, I experienced a very severe flare-up.

However, at that same time, while hiking through one of my favorite foraging fields, my eye caught sight of a particular yellow crabapple tree that was practically obscured by a loose colony of red crabapple trees. I felt particularly drawn to this tree and, as I sampled one of its fruits, I was pleasantly surprised at the delightful taste—more sweetly than sour and much more appealing than any of the red crabapples I had tasted. So, I gathered a small bucketful and took them home to consume the rest of that day and over the next day. To my delight, my skin flare-up rapidly subsided—by the end of that second day!

There was, in my mind, no doubt that it was the yellow crabapples that did it, as nothing else in my diet or supplements had changed. To make matters even more satisfying, I have not experienced *any* skin flare-ups from that time onward—now over a decade later. Needless to say, I continue to feast from that same yellow crabapple tree—which I call "The Magic Yellow Crabapple Tree"—every fall.

All things considered, I feel confident in stating that crabapples richly deserve the healing reputation that they have received in various traditional herbal systems.

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Health Benefits & Clinical Applications of Taurine

(Nutraceuticals, Part Five)

The nutraceutical taurine, also known as 2-aminoethanesulfonic acid, is a sulfur-containing amino acid that occurs in the diet and in the body where it is concentrated in the heart, eyes, brain, and muscle. Although not an essential amino acid *per se*, it is regarded as a conditionally essential amino acid. (Lourenco and Camilo 2002)

Bodily Synthesis

Taurine is synthesized primarily in the liver, with lesser contributions from the kidneys and possibly the brain, starting from the amino acid cysteine. The active form of vitamin B_6, pyridoxal-5′-phosphate (PLP, known on the supplement market as "P5P"), serves as a cofactor for the enzymes which convert homocysteine into cysteine, allowing the latter to serve as a substrate for taurine production. PLP also acts as a cofactor for the enzyme cysteine sulfinic acid decarboxylase (CSAD), which catalyzes the formation of hypotaurine from cysteine sulfinic acid—a key step in taurine biosynthesis. The enzymes involved in taurine biosynthesis are subject to age-related decline in activity, however, meaning that biosynthesis is decreased in seniors. Moreover, the hormone estradiol depresses the hepatic synthesis of taurine by decreasing the levels of CSAD, resulting in the availability of 10% less taurine to women's bodies as compared to what is available to men's bodies.

Dietary Sources

In the diet, taurine occurs primarily in shellfish and in some other seafood, as well as in dark poultry meat, pork, beef, lamb, eggs, and dairy. It is virtually absent from plants, except for some seaweeds, being most plentiful in nori. Since taurine performs many valuable functions in the body (as will be seen, below), this is bad news for vegans, who have been shown to possess 22% lower levels of taurine in the blood than omnivores. (Laidlaw et al 1988) Such a deficit may also be the case because biosynthesis in vegans may not even provide normal plasma concentrations, especially if cysteine levels are low due to low protein intake; and, indeed, studies have shown that vegans consume far less protein than omnivores, (Laidlaw et al 1988; Rana Sanders, 1986) In certain segments of this population—especially in seniors—this may even be to the point of taurine insufficiency or even deficiency. (Borkent et al 2024; Aaslyng et al 2023; Schmidt et al 2016)

Role and Activities in the Body

Taurine is a vital factor in osmotic regulation, membrane stabilization, mitochondrial function, modulation of ion transport, and in various cellular processes pertaining to the optical system (it occurs in all ocular tissues), the brain, cardiac muscle regulation, skeletal muscle function, hepatobiliary function, endocrine function, immune function, longevity, reproduction, and inflammation regulation.

In the **eyes**, this amino acid is found in high concentrations in the retina and is crucial to photoreceptor development. Deficiency has been shown to damage retinal neurons. (Gaucher et al 1993)

In the **brain**, taurine plays an important inhibitory role in neuronal firing. By binding to GABA_A and glycine receptors, it enhances inhibitory neurotransmission and helps mitigate glutamate-induced excitotoxicity through modulation of calcium influx and oxidative stress. This contributes to neuroprotective effects and neuromodulation, helping to protect against stress-related neuronal damage and other pathological conditions. (Wu and Prentice 2010)

Taurine concentrates in the **mitochondria**, regulating protein synthesis there, which enhances electron transport chain (ETC) activity and prevents excessive superoxide anion formation, thereby supporting normal ATP biosynthesis and serving as an antioxidant. It further supports ATP production by improving calcium homeostasis, preventing calcium overload, and maintaining mitochondrial membrane potential. (Abud et al 2022; Jong et al 2021; Hansen et al 2010)

In the **heart,** where taurine is abundant (approximately 100 times higher than plasma concentration)**,** it maintains proper contractile function, with pronounced deficiency leading to cardiomyopathy. Taurine is also abundant in **skeletal muscle**, where it helps to stabilize cell membranes, regulates intracellular calcium levels, and serves as an anti-inflammatory agent and antioxidant.

High concentrations of taurine occur in **bone** cells, where it is involved in creating new bone and in inhibiting bone resorption.

Taurine is conjugated to bile acids in the **liver** to form bile salts, a process that increases their

water solubility and helps keep them dissolved in bile. This prevents the bile acids from precipitating, reducing the risk of gallstone formation, while also supporting efficient digestion of lipids.

In the **immune system**, high levels of taurine occur in phagocytes, indicative of a role in innate immunity. It is widely understood that it plays an important role in the immune system as an antioxidant to protect cells—including leukocytes—from oxidative stress. (Schaffer et al. 2009) Taurine has even demonstrated anti-cancer effect, in particular against Epstein-Barr virus (EBV)-related naso-pharyngeal carcinoma (NPC) cells in laboratory studies, primarily by inducing apoptosis and autophagy, but also by modulating key tumor suppressor pathways. (Okano et al 2023)

The **endocrine system** is another area where taurine enables crucial functions. With regard to blood-sugar regulation, a systematic review and meta-analysis of five randomized controlled trials found that supplementation with this amino acid significantly reduced markers of dysglycemia, including hemoglobin A1c (HbA1c). (Tao et al 2022; Bae at al 2022) In animal studies, it has been shown to exert a regulatory effect on the hypothalamic-pituitary-adrenal (HPA) axis, negating stress-induced hypertension. (Lv et al 2015) A controlled clinical trial revealed depressed taurine levels in subjects with Cushing's disease, an adrenal–gland disorder. (Faggiano et al 2005)

As the endocrine and immune systems play important roles in aging, it should come as no surprise that taurine has been linked with **longevity,** with deficiency shown to contribute to accelerated aging**.** (El Idrissi et al 2009; El Idrissi et al 2013; Singh et al 2013; Barbiera et al 2022; Schaffer et al 2015; Abud et al 2022; McGaunn and Bauer 2023)

Healthy **male reproductive function** depends upon taurine as well. (Li et al 2023) In an animal study, administration increased spermatozoa quality and function in rats whose sperm had been impaired by a drug. (Du et al 2019) In a study published in 2018, researchers found that taurine's production in the male reproductive tract and its absorption by sperm were crucial to optimal male fertility and, in particular, allowed sperm cells to maintain their form in response to changing water levels in their environment. (Asano et al 2018)

This utilitarian amino acid also plays important **prenatal and postnatal roles**. In early pregnancy, for instance, it is stored in the mother's tissues for later transfer to the fetus in order to satisfy needs there, and afterwards when the infant arrives in the world and begins suckling. (Naismith et al 1987) As such, it is the most abundant free amino acid in breastmilk and is often added to infant formulas.

A high concentration occurs in colostrum, (Kim et al 1998) which is essential for the development of the brain and the retina. (Chawla 2018, Lima et al 2001) In the developing central nervous system, taurine acts as a neuroprotective agent against glutamate-induced excitotoxicity. Hence, if the infant winds up with low levels of taurine, this can adversely affect neurodevelopment. (Wu et al 2005; Chesney et al 1998) (Again, this is another area where breastfed babies of vegetarian mothers can wind up being shortchanged.—Rana and Sanders, 1986; Laidlaw et al 1988)

Supplemental Forms and Safety

Typical supplemental doses for adults are 1,500 to 3,000 mg/day, in divided doses. Some clinical trials have used 4,000 to 6,000 mg/day, and one even used 9,000-12,000 mg/day over a period of up to 52 weeks, with no serious adverse effects reported. However, in clinical practice, dosage rarely exceeds 3,000 mg/day.

Clinical Applications

Optical Issues: Visual Fatigue, Macular Degeneration, and Retinosis pigmentosa

Published studies have revealed that taurine can relieve visual fatigue (Duan et al 2023) and slow down degenerative eye diseases. As to the latter, in a case report of a 62-year-old male with the dry form of **age-related macular degeneration (AMD)**, oral intake at 600 mg., taken three times a day, arrested the degeneration over a 5.5-yr period. After the dose was doubled—from 1.8 g/day to 3.6 g/day—it moderately improved visual acuity and macular thickness. This improvement remained stable until the last control visit, 10 years after the beginning of the study. (Artigas et al 2023) Because of taurine's crucial importance to retinal health, where it serves as a neuroprotective agent, supplementation has been proposed to offset retinal degeneration. (Froger et al 2012; Castelli et al. 2021; García-Ayuso et al 2024) Indeed, in a clinical trial, 1,200 mg of taurine, in combination with 800 IU of vitamin E, increased visual acuity by 63% in subjects with **retinitis pigmentosa**. (Pasantes-Morales et al 1990)

Neurodegenerative Diseases: Parkinson's Disease, Alzheimer's Disease, ALS, and MS

In a murine (mouse) study, it was discovered that taurine protected dopaminergic neurons in a

model of **Parkinson's disease**. (Che et al 2018) Clinical trials and other research by Asian scientists have demonstrated an anti-dementia in seniors with dietary or supplemental use of taurine. (Bae et al 2017, Bae et al 2019; Gao et al 2019) A number of studies have shown potential or realized benefits in **Alzheimer's disease**. For example, a 2017 study found that this amino acid bound directly to oligomeric amyloid-β and recovered cognitive deficits in Alzheimer model mice. (Jang et al 2017) One of taurine's chief mechanisms in this regard appears to be its ability to prevent glutamate excitotoxicity. (Ramírez-Guerrero et al 2022) It further inveighs against Alzheimer's disease by stabilizing cell membranes, countering lipid peroxidation, and fighting inflamemation, thereby protecting memory. (Reeta et al 2017; Kim et al 2014; Surai et al 2021) In one study, it demonstrated an ability to prevent neurotoxicity of beta-amyloid and glutamate receptor agonists and to activate GABA receptors. (Louzada et al 2004) It has also been shown to reduce the formation of intracellular Ca^{2+} and ROS via $A\beta_{1-42}$. (Sun et al. 2014)

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease that results in motor dysfunction and death and which is precipitated by a variety of factors, including oxidative stress, mitochondrial dysfunction, inflammation, and glutamate excitotoxicity. In a 2017 study, investigators evidenced that taurine protected cultured motor neurons from neurotoxic injury, thus demonstrating neuroprotective properties and suggesting to the authors that it would most likely be a good candidate for therapeutic trials in ALS. (Lee and Kang 2017)

In a study published in 2018, researchers at Scripps Research Institute discovered that when taurine was taken in combination with the remyelinating pharmaceuticals benztropine and miconazole, it markedly enhanced the conversion of precursor cells into oligodendrocytes that produce myelin and assist in the repair of nerve damage. This result suggested to the study's authors that taurine might be helpful for persons suffering from the deymyelinating disease **multiple sclerosis (MS).** (Beyer et al 2018)

Epilepsy

An imbalance between the actions of excitatory and inhibitory neurotransmitters is thought to be one possible contributor to epileptic symptoms. Hence, seizures may be due to either overactivation of excitatory mechanisms or reduced activity of inhibitory mechanisms, or both. Owing to taurine's interactions with the GABAergic and glutamatergic systems and their inhibitory neurotransmitters, it winds up protecting neurons from glutamate-induced (excitatory) neurotoxicity, which appears to be the, or a, mechanism whereby this amino acid has benefitted persons periodically experiencing epileptic seizures. Hence, in a clinical trial published in 2013, taurine alleviated seizures in approximately one-third of epileptic sufferers, although it was noted that the effects diminished over time. (Oja et al 2013) In an earlier trial of 25 children with intractable epilepsy, partial to complete control was observed in seven of the children, but with no positive effects on the rest. (Fukuyama and Ochiai 1982)

Stroke

Clinical trials have shown taurine to be neuroprotective against ischemic stroke. (Menzie et al 2013; Ohsawa et al 2019) A major mechanism here, as with several of the neurological conditions mentioned above, would seem to be its ability to counteract the effects of glutamate, discussed above.

Cardiomyopathy and Heart Failure

Much of taurine's fame has come from its demonstrated aid in supporting healthy heart function and thus in stymieing cardiomyopathy and congestive heart failure. (In fact, its deficiency in the body is strikingly associated with cardiomyopathy.) Beginning way back in the 1980s, it has increasingly been used in heart failure patients, with marked benefits. For example, in a pilot study published in 1984, Japanese researchers followed 24 patients with congestive heart failure over eight weeks when receiving 2,000 mg. of taurine, twice a day. At the end of the study period, 19 of the patients showed marked improvement in clinical signs and symptoms. Moreover, thirteen of the 15 patients who were designated as New York Heart Association (NYHA) functional class III or IV before receiving taurine were reclassified as class II after the study was completed. (Azuma et al 1983; cf. Azuma et al 1985) In another clinical trial published by the same research group in 1992, 17 patients with congestive heart failure and documented left ventricular dysfunction with a mean ejection fraction of 39% were enrolled for an eight-week trial, of whom ten received 1,000 mg of taurine, three times a day, and seven received coenzyme Q10 at 30mg/day. In the

taurine group, there was significant improvement in systolic left ventricular function, with improved cardiac output, stroke volume, and ejection fraction. (Azuma et al 1992)

Much research has been done on how taurine affects exercise capacity in heart failure patients. In a randomized, controlled trial published in 2011, 29 patients with heart failure with left ventricular ejection fraction (LVEF) less than 50% who were in functional class II or III according to New York Heart Association classification were studied. Fifteen of them received 500 mg of taurine, three times a day, while fourteen took the placebo. The study period encompassed two weeks, during which time all patients performed exercise tolerance test before and after supplementation. Significantly increased exercise time, metabolic equivalents and exercise distance were found in the patients receiving taurine, but not so in the placebo group. (Beyranvand et al 2011) In a 2017 study, patients were assigned to either 500 mg of taurine three times a day or a placebo three times a day for two weeks, performing an incremental treadmill test before and after the supplementation period. Inflammatory indices (CRP and platelets) and atherogenic indices decreased before and after exercise in the taurine group but did not change in the placebo group. (Ahmadian et al 2017)

Coronary Artery Disease

In a 2004 review by Militante and Lombardini, the authors noted that "experiments using animal models provide extensive proof of the hypolipidemic and antiatherogenic effects of taurine." (Militante and Lombardini, 2004) In the same year, a clinical trial investigated the effects of using 3,000 mg/day of taurine vs. placebo in 30 overweight college students over a period of seven weeks. The result was that triglycerides, the atherogenic index, and bodyweight decreased significantly in the taurine group. (Zhang et al 2004) We must also draw attention to the anti-atherogenic effect found in the clinical trial cited above, by Ahmadian and colleagues. Then, too, several reviews published in the medical literature have explored taurine's benefits to the vascular system in great depth. (Xu et al 2008; Murakami 2014; Qaradakhi, T. et al. 2020)

Intermittent Claudication

Clinical research by Italian scientists revealed that taurine was markedly beneficial in patients with obliterating arteriopathy of the lower extremities, including those with intermittent claudication. The study reported positive results across various stages of the disease. (Zanelli et al 1971) A paper published in the journal *Medical Hypotheses* suggested that its efficacy here might be due to its ability to downregulate neutrophil activation and endothelial adhesion. (McCarty 1999)

Hypertension

A randomized, double-blind, placebo-controlled trial published in 2016 found that 1,600 mg of taurine a day in 120 prehypertensive individuals over a 12-week period significantly increased vasodilation and reduced BP against controls. (Sun et al 2016) A 2018 meta-analysis of seven studies with 102 participants concluded similarly. (Waldron et al 2018) In a 2022 review, Militante and Lombardini discussed another clinical trial, as well as rat studies, which evinced reduction of blood pressure by taurine, suggesting that the mechanism of its efficacy was a reduction in upregulated sympathetic nervous-system activity. (Militante and Lombardini 2022) Six grams a day of taurine even reduced portal hypertension in a placebo-controlled trial of 22 cirrhotic sufferers. (Schwarzer et al 2018)

Gallstones and Fatty Liver

Substantial benefits to the hepatobiliary system have also accrued from taurine. When this amino acid is deficient, there is less bile acid, and thus the salts are able to form stones. Concordantly, taurine has been shown in animal studies to exert a protective effect against cholesterol-based **gallstones**. (Yamanaka et al 1985)

Taurine is widely utilized to help counteract **fatty liver** as well, with a typical dose being 1,500 to 3,000 mg/day. This application is based, not only upon clinical experience, but upon a couple of good studies. (Song et al. 2021; Murakami et al 2018) Taurine has also been shown to reduce hepatic markers of inflammation. (Li et al 2013)

Diabetes/Metabolic Syndrome

One of taurine's most remarkable assists has been in persons with disaffected blood-sugar regulation mechanisms, including **metabolic syndrome** and **diabetes,** as well as with complications of such, including neuropathy. (Sarkar et al 2017) Here, an intriguing meta-analysis of five, randomized clinical trials concluded that supplemental taurine effectively lowers fasting blood-sugar and HBA1c levels (Tao et al., 2022), while a more recent meta-analysis of 1024 persons from 25 clinical trials revealed that it demonstrated positive effects on a variety of

factors related to metabolic syndrome, especially fasting blood glucose and triglycerides. (Tzang et al 2024)

Diabetic neuropathy is an especially aggravating complication of diabetes, where pain and discomfort rack the feet and sometimes the hands. However, in a study of diabetic rats, taurine ameliorated neuropathy by regulating NF-κB and Nrf2/HO-1 signaling cascades. (Agca et al 2014) In an earlier study, this amino acid reversed neurological and neurovascular deficits in Zucker diabetic fatty rats. (Li et al 2006)

Sarcopenia

A particular concern in older persons is sarcopenia, an extreme form of muscle loss, which has been connected with taurine depletion. (Ito et al 2014) However, animal and in-vitro studies have demonstrated taurine's ability to counteract this serious condition. (Barbiera et al 2022; Schaffer and Kim 2018; Scicchitano and Sica 2018) Effective doses range from 1,500 to 3,000 mg/day.

Muscular Dystrophy (MD)

Several animal studies have investigated taurine's effects in muscular dystrophy. In one of these, taurine improved skeletal muscle function in the mdx mouse model for Duchenne muscular dystrophy. (Terrill et al 2016; cf. Merckx & De Paepe 2022; De Paepe 2023; De Luca et al 2015)

Inflammatory bowel disease (IBD)

Inflammatory bowel disease (IBD) is marked by inflammation in intestinal tissue, intestinal barrier dysfunction, dysbiosis, excessive neutrophil activation, and lipid peroxidation. Studies have shown that patients with IBD, including both ulcerative colitis (UC) and Crohn's disease (CD), possess significantly reduced serum taurine levels compared to healthy controls. (Frascatini et al 2024) Research has revealed that taurine can counteract all of the above features of IBD, and especially so in UC. (Qian et al 2023; Zheng et al 2024; Mandal et al 2025)

Asthma

Administration of taurine has been reported to relieve asthmatic symptoms and to protect the lungs from oxidative stress. In addition to its antioxidant effect, taurine is thought to mitigate airway hyperresponsiveness by reducing inflammation in pulmonary tissue. It has been shown to promote the production of regulatory T cells (Treg), which are crucial for maintaining immune tolerance and for reducing allergic inflammation. (Chen et al 2025; Cortijo et al 2001)

Tinnitus

In animal studies, dietary taurine attenuated chronic tinnitus, probably as a result of acting as a partial agonist at glycine and GABA receptors, thereby increasing inhibitory tone and decreasing noise in the auditory pathways. (Brozoski et al 2010)

This concludes our study of taurine. I hope you have found it to be of interest and value.

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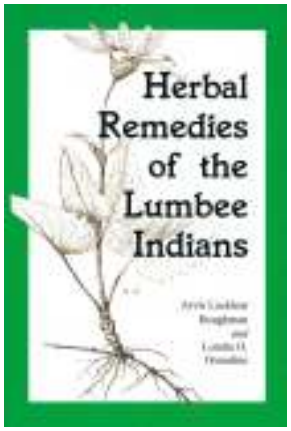
Book Reviews

Herbal Remedies of the Lumbee Indians

by Arvis Locklear Boughman and Loretta O. Oxendine. McFarland & Co., 2004, 179pp.

Reviewed by Matthew Alfs, MH, RH(AHG)



The Lumbee Indians have dwelled in the coastal plain of North Carolina for centuries, with access to a multitude of plants for food and for medicine. In this book, written by two members of that tribe, the rich plant lore of this people is ably documented and explicated.

After a brief introduction on the history of the Lumbee, the heart of the book unfolds in the form of a most interesting materia medica (pp. 11-102), followed by a glossary, and then an eight–page repertory of ailments and the herbs that heal them.

In that the materia medica outlines uses of many plants little known to modern Western herbalists, it can only be described as a treasure trove of much-needed knowledge. Such plants include Adam and Eve root, adder's tongue, Amercian holly, alumroot, ball root, bay tree, bear grass, bitterweed, black gum tree, black snakeroot, broom grass, bugle plant, devil's shoestring, dog-fennel, fever grass, gall of the earth, graybeard, ground huckleberry, heartleaf, Indian hemp, ironweed, old timey garlic, peppergrass, ragweed, Sampson's snakeroot, snapdragon, sourwood, spotted horsemint, whiteweed, yellow birch, and yellow root.

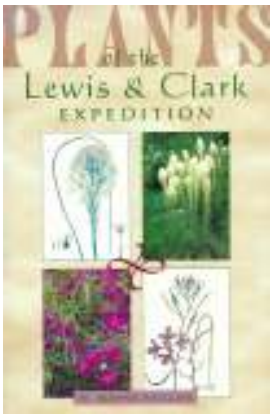
A lengthy appendix (pp. 119-163)—my favorite section of the book—presents interviews with Lumbee healers and elders. A second appendix features two reprinted articles about Lumbee healers Vernon Copper and Earl Carter. The book concludes with a bibliography and a detailed, nine-page index of every plant and person discussed in the book.

In conclusion, this power-packed book holds a revered place in my several-thousand-volume home library.

Plants of the Lewis & Clark Expedition

by H. Wayne Phillips. Mountain View Publishing Co., 2003, 277pp.

Reviewed by Matthew Alfs, MH, RH(AHG)



When U.S. President Thomas Jefferson commissioned, in 1803, an expedition to the Western region of North America that would eventually become part of the United States, he chose the right man to lead the scientific aspect of that mission: Meriwether Lewis, a skilled botanist.

This delightful book takes us through that journey by way of 225 plants encountered along the way, coupled with excerpts from Lewis' journal about each and every one of them. Much-appreciated additional features include 315 gorgeous color photos (a few of them provided by herbalist Stephen Foster), seven maps, ten 19th-century sketches of Lewis and Clark's botanical specimens, and brief physical descriptions of each plant. These descriptions, coupled with the clear and well-positioned photos, even allow the book to be utilized as a field guide.

Some of the many interesting plants culled from the journal's notes and pictured in the book include goldenseal ("a strong astringent… probable that it might be applied in many cases as a medicine with good effect"); pineapple-weed ("an agreeable smell"); and Western sweet cicely root ("very agreeable food, the flavor of this root is not unlike anise seed, and they dispel the wind").

Reading this book took my explorer's mind back to the magic and mystery of early nineteenth-century America and its lush, largely undisturbed natural wonders. I found it very difficult to leave. .