MWSHS Student Newsletter

Spring 2021

MWSHS Profile

Stephanie Davis

Stephanie Davis recently graduated from the Western-Herbalism module of MWSHS' Master-Herbalist Program and has completed the lesson work for both Asian Herbalism and Integrative Herbalism.

But how did Stephanie wind up becoming a student with MWSHS? She informs us: "I had been cultivating a long relationship with plants, through gardening and floral design, but had always wanted to get to know the plants more fully—what they were and how they could be used for medicine. I had some previous experiences with using herbs, but was seeking a more thorough understanding. So I decided to research herbalism schools, looking for a reputable school. That lead me to the American Herbalists Guild (AHG) website; then, after some additional research, I decided upon MWSHS. That school met what I was looking for: flexible studying, hands-on workshops, assessment skills, situated close to home, and a member school of the AHG."

Asked as to what aspects of MWSHS' herbal program she has appreciated the most, Stephanie elucidated: "Being a busy mom of 4, I've enjoyed the program's flexibility and my being able to complete it at my own pace. I've also enjoyed the variety of areas that the program covers."

Like all students, Stephanie faced challenges in working through the program: "I found it hard to stay focused and on track in getting my reading and the questions done," she informed us, "so I did the Classroom Add-on, offered by MWSHS every two years. [This is currently being conducted via an online platform, due to COVID restrictions.—*Editor*] I found that to be encouraging and it motivated me to finish questions on a weekly basis relative to our class discussions. I also found it wonderful to build relationships with my classmates and with the instructor, MWSHS director Matthew Alfs. Hearing his hands-on experiences and stories helped me to remember different herbs and their uses."

As to the rewards she has experienced from the program, Stephanie offered these thoughts: "The program has been very helpful in building my knowledge of plant medicine, in identifying plants, and in my ability to use assessments to aid others in using *(Continued in column two.)*

Early 2021 Graduates

We offer congratulations to the following recent graduate of the Western-Herbalism Module:

Stephanie Davis

We offer congratulations to the following recent graduate of the Asian-Herbalism Module:

Lisa Kofakis

We offer congratulations to the following recent graduate of the Integrative-Herbalism Module:

Tim England

We look forward to hearing more from all of these graduates as they continue to apply what they have learned in their lives.

Stephanie Davis Profile *(continued from column 1)*

herbal medicine. It has also sparked more curiosity in me, pushing me to seek more knowledge about the plants around us."

As to her current interests and endeavors in herbalism, Stephanie notes: "I am currently working on finishing the Master-Herbalist Diploma Program and plan to have that completed by fall of this year. I continue to grow my knowledge by taking botany classes, online herbal courses, and building my library of herbal books."

Stephanie has some long-range goals relative to her love of herbalism, too. As she tells us: "My husband and I have an 8-acre property and plan to have a diverse edible and medicinal permaculture farm, where I can grow and harvest herbs for tinctures, teas, and salves. I have been adding new varieties of herbs and edibles to the property every year. I have found 40 different varieties already on the property and seem to find new ones every year. I also plan to open up the property for herb walks in the future to help to educate others. I'd also eventually like to start a small herbal consultation practice."

We wish Stephanie the very best in all of her endeavors and have no doubts that she will be successful in each and every one of them!

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. *Note that our allowance of online conferences for workshop credits continues through 2021, owing to continued COVID restrictions on assemblies.*

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

Medicines from the Earth Herb Symposium. Online. Begins online video streaming June 4, 2021. Friday online intensive: Targeting the Biological Terrain in Collaborative Oncology, plus over 25 other lectures. Lectures include: Targeting Cancer Stem Cells with Botanical Medicine; Herbal Medicine for Parasites (Giardia, Blastocystis, etc); Vaporizer Technologies for the Delivery of Botanicals; Lifting Deep Lethargy and Melancholy; PANDAS and PANS--Natural Medicine Rescue for Post-Infectious Autoimmune Conditions and more. Local in-person field studies and herb walks in the Asheville, NC area. Over 40 hours of continuing education for ND, DO, MD, RN, FNP, LAc and others. Early bird ends March 3rd. For more info or to register: 541-482-3016 https://www.botanicalmedicine.org/

"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.

International Herb Symposium, Online. June 10th-13th, 2021. Over 100 classes, with instructors from over 20 countries. International virtual plant walks. Includes a veterinary botanical medicine track. For more info or to register: https://internationalherbsymposium.teachable.com/

Botanica Festival. June 26-27, 2021. Lafayette, CO. This ethnobotany-themed event will bring herbalists together to take part in hands-on workshops exploring and celebrating plants and the important role they have had in art, medicine, food, culture, ritual, and spirituality. For more info or to register: https://www.botanicafestival.com/

32nd Annual AHG Symposium, Online. October 15-17, 2021, is a virtual event featuring classes, panel discussions, world-class keynote speakers, and a vendor fair, all geared to the herbal community. The theme of this year's Symposium, "Recovery, Resistance and Resilience: Trauma-Informed Herbalism," explores the ways herbalism is expanding and evolving as we respond to changes in the world around us. Early registration begins July 1, 2021.

MWSHS Student Newsletter, Spring, 2021. Correspondence should be addressed to us by snail-mail at Midwest School of Herbal Studies, P O Box 120096, New Brighton MN 55112 or by email at MWSHS@aol.com.

L-Carnitine &Acetyl-L-Carnitine

(Part Two of a Series on Nutraceuticals)

by Matthew Alfs, MH, RH (AHG), MWSHS Director

Carnitine is an amino-acid-like compound and conditionally essential nutrient that is synthesized in the human liver from the amino acids lysine and methionine, but dependant upon sufficient levels of vitamin C, iron, and vitamin B_6. Thereafter, it is taken up by the bloodstream, from which skeletal and cardiac muscle then store and utilize most of that supply. It is also widely distributed in animal foods (the word "carnitine" being derived from the Latin word for "flesh," *carnis*), but not from vegetative sources. Carnitine exists as one of two stereoisomers: L-carnitine (the "L" being an abbreviation for "levo") and D-carnitine. The form present in the body is L-carnitine, which is also the form present in food. Altogether, the body makes about 25% of its needs, with the diet ideally supplying the remaining 75%.

Acetyl-L-carnitine (ALC) is a molecule that derives from the acetylation of carnitine in the mitochondria. After being synthesized, it is transported outside of the mitochondria and into the cytosol by an enzyme, whereby it enables the transport of acetyl-CoA (the primary substrate for the Krebs cycle, responsible for the body's energy production) across mitochondrial membranes.

Supplemental Sources of Carnitine

Supplemental sources of carnitine are widely available on the supplement market—primarily as capsules, but also in liquid form. A drawback assessed by some users is the fishy odor that is emitted. But, of course, holding one's nose in the presence of this odor can usually obviate this to a large degree. (I used to inform my kids of this method of overcoming the bad smell of their multivitamins; but that didn't stop them from burying each daily serving in the crevice of the back seat of the car as I drove them to school—only to be discovered later as I disposed of the car and checked the back seat for coins that had fallen into the crevice!) In some persons, this fishy odor can be emitted from the skin, but usually only if higher doses (several grams) of carnitine supplements are consumed. Acetyl-L-carnitine is also available on the supplement market, but primarily in encapsulated form. Either of these should only be taken on an empty stomach in order to achieve the best effectiveness. Unwanted side effects are rare; when they do occur, they tend to take the form of digestive discomfort and/or loose stools.

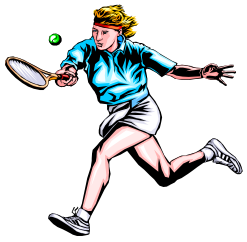
Functions of Carnitine and Acetyl-L-carnitine

Carnitine is concentrated in tissues like skeletal and cardiac muscle that metabolize fatty acids as an energy source. This is because carnitine is crucial for fat metabolism in the body: it ensures the transport of long-chain fatty acids into the inner mitochondrial compartment where they undergo oxidation and serve to provide energy. It also facilitates the elimination of various metabolic wastes—which, if not eliminated, could damage cell membranes.

Acetyl-L-carnitine enables the uptake of acetyl CoA into the mitochondria during fatty-acid oxidation, provides acetyl groups for acetylcholine synthesis and produces a cholinergic effect, and stimulates protein and membrane phospholipid synthesis. It also provides for the elimination of oxidative products. It is synthesized in the liver, the kidneys, and the brain (with especially high amounts occurring in the hypothalamus) and is thought to have a preferential effect on the tissue of that latter organ, which has been exemplified in a number of scientific studies, as we shall see below.

Benefits of Carnitine Supplementation

One of the most easily discernible benefits of carnitine supplementation is an improvement in energy and a consequent reduction in fatigue. This is not only easily observable clinically, but is widely acknowledged in the scientific literature. For instance, at a dose of 4g/day (= 2g every 12 hrs), L-carnitine supplementation prevented fatigue in cancer patients undergoing chemotherapy with cisplatin. (Graziano et al. 2002. *Br J Cancer* 86[12]:1854-7) In another study, cancer patients receiving chemotherapy and experiencing fatigue were supplemented with 1,500 mg/day of L-carnitine and all of them experienced an improvement in energy levels. (Matsui et al. 2018. *Mol Clin Oncol* 8[3]: 413–416.) In another study, cirrhosis patients suffering from fatigue experienced improvement by taking 1,800 mg/day of L-carnitine for 6 months, which was attributed by the authors to the supplement's attenuation of oxidative stress. (Sato et al. 2020. *Biomed Rep*. 2020 13[6]:65) In yet another study, patients with cardiovascular disease were able to exercise more when taking carnitine supplements. (Thomsen et al. 1975. *Amer J Cardiol* 43[2]:300-06)



When Carnitine Levels Are Not Optimal

Premature infants tend to have low carnitine stores, which can be compensated via special carnitine-fortified formulas. Then, too, a rare genetic disorder can produce primary carnitine deficiency that will manifest in youngsters as skeletal-muscle

weakness and myocardial degeneration. Yet, even in adults, tissue levels of L-carnitine decrease with age, which may be reflected—at least in part—by the loss of muscle mass and the fatigue that occur in oldtimers.

Chronic renal failure may lead to a secondary carnitine deficiency, as may faulty digestion. Anticonvulsant drugs are culprits that can rob carnitine from the body. In muscular dystrophy, carnitine is lost in the urine, which is also the case in congestive heart failure. Certain regimens of chemotherapy can also provoke urinary loss of carnitine. In all of these situations, the chief manifestations will be general fatigue and muscular fatigue.

Clinical Applications of Carnitine Supplements

Male infertility

You may have heard the recent news that childbirth has nosedived over the last year. Then, too, reports over the last decade or so have noted that sperm counts have been dropping in males and that the ability of men to fertilize women may not even be possible as early as the middle of this century. This is serious stuff, indeed.

Of interest here is that because the carnitine content of seminal fluid is directly related to sperm count and motility, it has been speculated that L-carnitine supplementation might well prove to be useful in treating male infertility. That seems to have held true in my own clinical practice, where I believe its use has powerfully contributed to my overall success rate in working with men who have not been successful in impregnating a woman.

Scientific research has confirmed that L-carnitine markedly improves both the motility and the fertility of sperm. In a 1994 clinical trial of 100 patients with suboptimal sperm motility who received 3 g/day of oral L-carnitine for 4 month, motility increased from 26.9% to 37.7%, mean velocity increased from 28.4% to 32.5%, and sperm output increased from 142.4 to 163.3. The conclusion of the authors was that L-carnitine may improve the quality of sperm in patients with suboptimal sperm motility. (Costa et al. 1994. *Andrologiaay*. 26[3]:155-9)

Another clinical trial investigated the effectiveness of L-carnitine administration (3 g/day for 90 days) in a group of patients with poor sperm motility. In 37 out of 47 of these patients, the supplement produced a beneficial effect, increasing motility and rapid linear progression. (Vitali et al. 1995. *Drugs Exp Clin Res* 21[4]:157-9)

A double-blinded, placebo-controlled, crossover clinical trial published in 2003 examined 100 infertile men with low sperm concentration, total motility, and forward motility who were undergoing L-carnitine therapy at 2/g day or placebo, with a study design of washout, then therapy, then washout, and then therapy. This resulted in a significant improvement in semen quality for sperm concentration and total and forward sperm motility in the treatment group and especially in those men with lower baseline values for the latter. (Lenzi et al. 2002. *Fertil Steril* 79[2]:292-300)

Two years later, a blinded, placebo-controlled clinical trial sought similarly to examine the role that L-carnitine might play in benefiting 30 patients with suboptimal motility. This time, however, the patients were divided according to phospholipid hydroperoxide glutathione peroxidase (PHGPx) levels. Interestingly, only those with normal PHGPx levels, known for its important role in male fertility, showed an improvement in mean sperm motility. (Garolla et al. 2005. *Fertil Steril* 83[2]:355-61)

In a real-life situation, a clinician hardly ever uses monotherapy to achieve a clinical goal and such is the case with my own practice, where I also use additional supplements to support male fertility, since often the "clock is ticking," so to speak, i.e., a couple may have limited time in order to produce a child so that results must soon be achieved. Because of this reality, a number of clinical trials have examined multi-supplement regimens that have included L-carnitine in support of male fertility. For example, in an open-label, prospective, randomized study, 80 infertile men with sperm DNA fragmentation and oxidative stress received either a proprietary combination of acetyl-l-carnitine, L-carnitine fumarate, and alpha-lipoic acid or a placebo for 180 days or until fertility was achieved. In the treatment group, significant positive changes were seen in sperm motility and morphology, starting from the third month of therapy. The level of free oxygen radicals also significantly decreased (by 86%). A marked decrease in DNA fragmentation was seen in the treatment group compared to the placebo group (21.5% vs. 3.6%) and, most importantly, pregnancy was achieved in 13 cases in the treatment group and in only one case in the placebo group. (Gamidov et al. 2019. *Urologiia* 24:62-68)

In another multi-ingredient trial, published just a year later, eighty-three infertile males aged 21-50 years were given a combination of L-carnitine/acetyl-l-carnitine, L-arginine, glutathione, co-enzyme Q10, folate, vitamin B_{12}, zinc, and selenium or a placebo, one time daily, for six months. At month four, 29/42 (69.0%) men in the treatment group and 9/41 in the placebo group had normal spermiograms. The percentage of pregnancies in the treatment group (10/42, 23.8%) was markedly greater than in the placebo group (2/41, 4.9%). (Kopets et al. 2020. *Andrology* 8(5):1184-1193)

Earlier this year, a meta-analysis of four clinical trials was published that had included patients with asthenic sperm who were treated with L-carnitine and/or acetyl-L-carnitine The results indicated that the treatment achieved an improvement in sperm motility and in normalizing aberrant morphology (shape) in comparison with the placebo group, but did not increase sperm count and volume. (However, an analysis of three other trials revealed that n-acetyl cysteine—which the FDA is now threatening to pull from the supplement market—improved both of these latter parameters.—Wei et al. 2021. *Am J Mens Health* [2]:15579883211011371)

Muscular dystrophy

This is a disabling condition that leads, as noted earlier, to carnitine loss in the urine, so that replacement can sometimes lead to moderate improvement in energy and muscular endurance. I can recall two clinical cases where this was indeed what had occurred. In one case, the patient reported the improvement in energy and muscular endurance to her physician, who acknowledged that the carnitine supplementation was indeed responsible. This prompted the patient to ask him: "It that's the case, then why didn't *you* recommend it to me?" In another of my clients, it enabled him to walk a bit around part of the Grand Canyon, which was a dream that he had long entertained but had never been able to pursue since he knew that it would have been impossible prior to the implementation of his natural-products protocol. Scientific research dovetails with these clinical results. For example, in laboratory experiments with Duchenne muscular dystrophy muscle cells, carnitine appeared to restore muscle-cell membrane fluidity. (Le Borgne et al. 2012. *PloS One* 7: e49346.

Fatty liver

A systematic review and meta-analysis of L-carnitine supplementation in non-alcoholic fatty liver disease from five randomized clinical trials indicated that such supplementation attenuated the elevated liver enzyme ALT, liver fat, and insulin resistance in persons afflicted with this condition. (Thiagarajan et al. 2020. *World J Meta-Anal*. 8[1]: 4-14) Another meta-analysis of five trials published in the same year came to similar conclusions, noting that carnitine supplementation decreased both of the liver enzymes (AST, ALT) and triglycerides. (Abolfathi et al. 2020. *Complement Ther Med* 48:102273)

Cardiomyopathy and Congestive heart failure

If the heart muscle (myocardium) distorts or enlarges or otherwise degenerates, this is referred to as *cardiomyopathy*. There are, however, several forms. *Dilated cardiomyopathy,* one of the more common forms, is where the myocardium is dilated—pulled and thinned. However, when the myocardium's contractile strength begins to falter, so that cardiac output is reduced, this is referred to as *heart failure.* If either or both of the ventricles fail, congestion in the body will result, so that *congestive heart failure (CHF)* is experienced. The seriousness of the condition is reflected by the heart's ejection fraction, which progressively falls as the condition worsens, and by a laboratory marker, brain natriuretic peptide (BNP), that rises with progression of the disease. Patients are classified into four stages, designated New York Heart Association (NYHA) 1-IV, with the higher the number, the worse the diseased state. As was noted earlier, carnitine levels are subnormal in these patients.

In a double-blinded, randomized, controlled clinical trial, 60 patients with CHF (ejection fraction < 50%, NYHA class II or III) received either propionyl-L-carnitine (a form of carnitine used in Europe, but less available and little appreciated in the USA) (50 mg, t.i.d.) or a placebo for 180 days. During the study, digoxin and diuretics were allowed. Significant improvements in maximum exercise times and ejection fractions were reported (ejection fraction actually improved from 41% to 47%). (Mancini et al. 1992. *Arzneimittelforschung* 42:1101-1104) In another clinical trial published in the same year, oral administration of L-carnitine for 12 weeks significantly improved the exercise tolerance of patients with angina. Notably, in nine patients with chronic congestive heart failure, 5 of them (55%) moved to a lower NYHA class and the overall condition was improved in 6 patients (66%) after the treatment with L-carnitine. (Kobayashi et al. 1992. *Jpn Circ J* 56[1]:86-94)

In 2017, a meta-analysis of seventeen randomized clinical trials utilizing L-carnitine or propionyl-L-carnitine for 1625 patients with congestive heart failure was published online. It found that the carnitine treatment was associated with considerable improvement in overall efficacy, left-ventricular ejection fraction, strike volume, and cardiac output and in decreasing elevated laboratory markers of dysfunction (BNP and NT-proBNP). (Song et al. 2017.*Biomed Res Int* 2017:6274854. Epub 2017 Apr 13)

A meta-analysis of 23 clinical trials that was published in January of the present year looked at the supplementation of L-carnitine for dilated cardiomyopathy in 1,455 patients. It found that the treatment was associated with a considerable improvement in the overall efficacy, left-ventricular ejection fraction, and cardiac output as compared to the control groups. It was also determined that the L-carnitine therapy significantly decreased the elevated laboratory markers of dysfunction. (Weng et al. 2021. *Biomed Res Int* 12;2021:9491615. EPub)

Hyperlipidemia/Hypertriglyceridemia/Depressed HDL

Almost everybody is familiar with the idea that lipid imbalances are connected with cardiovascular disease. It is not to unexpected, then, that clinical trials would be done to check on carnitine's effects on lipids, in that that compound is so essential to heart health. In fact, a number of such trials have been done. In a review and a meta-analysis of 67 of these studies, the pooled results indicated that L-carnitine administration led to a significant decrease in the concentration of triglycerides, total cholesterol, and LDL-cholesterol (LDL-C) and a likewise significant increase in HDL-cholesterol (HDL-C) levels, demonstrating that its administration markedly affected lipid levels in a positive manner. (Fathizadeh et al. 2019. *Curr Pharm Des* 25[30]:3266-3281) Another review and meta-

analysis of 24 randomized, controlled trials published just a bit later showed significant positive effects of L-carnitine on total cholesterol, HDL-C, Lp(a), fasting plasma glucose, and HbA1C. In addition, sensitivity analysis indicated that its supplementation could improve glycemic control, particularly along with a low-calorie diet. The improvement in lipid profile levels was most clearly observed in doses of more than 1500 mg/day. (Asadi et al. 2020. *Clin Nutr* 39[1]:110-122)

Ischemic Disease/Angina/Myocardial infarction

When blood and oxygen cannot get to vital parts of the body as a result of blockage, those areas are said to be *ischemic*. If the choked supply is to the heart, this is referred to as *myocardial ischemia*. A sharp chest pain, referred to as *angina pectoris,* is often a signal that ischemia is occurring in this region. Occlusion of the coronary arteries, referred to as *coronary thrombosis*, is most often the mechanism responsible. Plaque is often the occluding agent here, but a spasm (which can be caused by low magnesium levels, among other instigators) can also be responsible. Regardless of what is causing the occlusion, however, the eventual result is usually a "heart attack," typically manifested by a prolonged, squeezing pain behind the sternum and some referred pain to other areas (shoulders, back, arms, fourth and fifth fingers, etc.) of the body. This situation entails a killing of part of the heart muscle, i.e. a *myocardial infarction*.

L-carnitine can have profound benefits in ischemia, in angina, and in post myocardial infarction, as several excellent clinical trials have demonstrated. As one example, in a double-blinded, placebo-controlled, randomized, crossover trial, 44 men with chronic stable angina received either L-carnitine (1 g/b.i.d.) or placebo for four weeks. The carnitine group achieved significant improvements in mean exercise workload, watts to onset of angina, and ST segment depression. Moreover, 22.7% of the patients became free of angina with L-carnitine, whereas only 9.1% did so with placebo. (Cherchi et al. 1985. *International Journal of Clinical Pharmacology , Therapy, and Toxicol* 23 [10]569-72)

A larger trial randomized 200 patients with exercise-induced stable angina to L-carnitine (2 g/day) for six months. Improved exercise tolerance, as measured during cycle ergometric testing, was one notable result, as well as a reduction in the number of premature ventricular contractions (PVC) at rest. This was accompanied by improvement in cardiac function and resultant performance that even eventuated in a reduction in the consumption of their cardioactive drugs. Furthermore, laboratory analysis showed an improvement in plasma lipid levels. (Cacciatore et al. 1991.*Drugs Exp Clin Res* 17:225-235)

In yet another study, published in 2000, forty-seven patients with chronic, stable angina were randomized to receive L-carnitine (as a dose of 2 g/day) or placebo for three months. In the L-carnitine group, there was a statistically significant improvement in the exercise duration and in the time needed for the ST changes to revert to baseline. The authors concluded that L-carnitine improves the duration of exercise and the time to recovery of ST changes. (Iyer et al. 2000. *J Assoc Physicians India* 48(11):1050-2)

L-carnitine has also been studied in post-infarction patients. In a controlled study, 160 post-infarction patients were followed for one year, with the study group taking L-carnitine at 2 g/b.i.d.. A pronounced decrease in mortality was seen with the carnitine group (only 1.2% died) compared to the control group (12% died). (Davini et al. 1992. *Drugs Exp Clin Res* 18:355-365)

A multicenter, double-blinded, placebo-controlled, randomized clinical treated 472 subjects within 24 hours after a first anterior myocardial infarction with either L-carnitine (9 g IV daily for five days, then 6 g/d orally) or placebo for 12 months. Carnitine significantly attenuated left-ventricular dilation in the first year of treatment. The increases in end-systolic and end-diastolic volumes were markedly lessened by carnitine. The combined incidence of death and congestive heart failure after discharge was 14 (6%) in the L-carnitine treatment group versus 23 (9.6%) in the placebo group (Iliceto et al. 1995. *J Am Coll Cardiol* 26:380-387)

A review of clinical trials published in 2004 favorably summarized carnitine's anti-ischemic and anti-anginal effects that were rather consistently demonstrated in the trials. (Ferrari et al. 2004. *Ann N Y Acad Sci* 1033:79-81) Then, too, a review and meta-analysis of thirteen controlled trials published in *Mayo Clinic Proceedings* in 2013 concluded: "Compared with placebo or control, l-carnitine is associated with a 27% reduction in all-cause mortality, a 65% reduction in VAs [ventricular arrhythmias], and a 40% reduction in anginal symptoms in patients experiencing an acute myocardial infarction." (DiNicolantonio 2012. *Mayo Clin Proc* 88[6]:544-51)

Peripheral vascular disease/Intermittent claudication

Peripheral vascular disease, a slow and progressive circulation disorder involving narrowing, blockage, or spasms in any blood vessel outside of the heart (but most commonly in the legs), is also associated with lower carnitine levels. It can progress to the point where intermittent claudication occurs—a state where walking becomes progressively difficult due to cramping, fatigue, and aching in the muscles of the buttocks, thighs, and calves.

Propionyl-L-carnitine, which is specifically associated with blood flow and regulation because of affecting the production of nitrogen, is often utilized in Europe for this condition and in clinical trials, but is little known and utilized in the USA, as we earlier noted. However, in a double-blinded, placebo-controlled study of persons afflicted with intermittent claudication, it was discovered that 1-2 g/day of propionyl-L-carnitine significantly

improved the maximal walking distance of the treatment group as against the placebo group. (Brevetti et al. 1995. *J Am Coll Cardiol* 26[6]:1411-16) Some years earlier, the study authors had conducted a double-blind, crossover trial with 20 men comparing carnitine (2 g, b.i.d) and placebo for three weeks in random order, with the result that the carnitine treatnment significantly increased treadmill walking distances to the point of claudication compared to the placebo (Brevetti et al. 1988. *Circulation* 77:767-73) Then, too, a randomized, double-blinded study involving Chinese patients who were given 2 g/day of propionyl-L-carnitine found their maximum walking time and walking distance prolonged as against the placebo group. (Tao et al. 2013. *Thrombosis Research* 132[4]:127-32)

Type-II Diabetes

Carnitine's benefits for diabetics are manifold and a chief reason for this is that it stimulates glycolysis (the initial step in the breakdown of glucose to extract energy for cellular metabolism), thereby improving the regulation of glucose metabolism and obviating complications such as fatigue, insomnia, and disordered mental activity**.** A published study has also shown that it reduces oxidized LDL cholesterol in diabetics, which is an extremely important finding. (Malaguarnera et al. 2009 *Am J Clin Nutr* 89[1]:71-6) Then, too, a review and meta-analysis of 37 randomized, controlled trial published in 2019 concluded that L-carnitine supplementation significantly reduced fasting plasma glucose, insulin, and HbA1c levels. (Fathizadeh et al. 2019. *EXCLI J* 18:631-643)

Most lately, a clinical trial of 181 Greek diabetic patients aged 50-65 who received 2 g/day of l-carnitine for six months on an empty stomach resulted in a mean decrease in fasting glucose by 17.51 after three months, a statistically significant mean decrease in both three- and six-month milestones for HbA1c, and a significant decrease in triglyceride measurements after three months and after six months. Finally, significant changes were found for tiredness at three and six months and insomnia at three and six months. (Karalis et al. 2020.*Cureus* 12[5]:e7982)

Sarcopenia and Cachexia

Sarcopenia is loss of muscle mass, strength and function and primarily tends to occur in persons of advanced age. Secondary sarcopenia can be caused by cirrhosis of the liver. As to the latter, in a 2018 clinical trial, 35 liver cirrhosis patients received L-carnitine supplements and 35 propensity score-matched patients served as controls. Compared with the control patients, those who were given L-carnitine had significantly worse liver function at the beginning of the trial, which is associated with rapid progress of skeletal muscle depletion; however, loss of skeletal muscle mass was significantly suppressed in the carnitine group as the trial proceeded and ammonia levels were significantly less in those receiving it as well. Yet, even in patients receiving L-carnitine but not experiencing a decrease in ammonia, loss of skeletal muscle was significantly suppressed. The conclusion of the study authors was that L-carnitine suppressed loss of skeletal muscle mass and that it thereby emerges as an option for sarcopenia in patients with cirrhosis of the liver. (Ohara et al. 2018. *Hepatol Commun* 2[8]: 906–918)

Cachexia is a state of wasting that occurs toward the end of life in a person afflicted with cancer. It is marked by weight loss, loss of appetite, and fatigue. I have developed a protocol for this that seems to slow it down to some extent and a major player in this protocol is L-carnitine. My inclusion of L-carnitine in this protocol was based upon a number of impressive studies—both in animals and in humans—that successfully used it for this condition. For example, in a prospective, multicenter, placebo-controlled, randomized and double-blinded trial, 72 patients with advanced pancreatic adenocarcinoma received 4 g/day of L-carnitine or placebo for 12 weeks, with the result that it reduced malnutrition, increased body weight, and improved body composition. (Kraft M et al. 2012. *Nutr J* 11:52) Another study found that when 12 patients with cancer (mixed tumor types, stages III and IV) consumed 6 g/day of L-carnitine over a period of four months, their fatigue decreased significantly, their lean body mass and appetite increased significantly, and levels of reactive oxygen species decreased, while glutathione peroxidase increased. (Gramignano et al. 2006. *Nutrition* 22:136–145.)

A meta-analysis published in 2018 determined that "l-carnitine supplementation leads to beneficial effects on several critical mechanisms involved in pathologic skeletal muscle loss and improved fatigue-related parameters in patients with cancer." (Esfahani et al. 2018. *Asia Pac J Clin Nutr* 27[3]:503-11)

Clinical Applications of Acetyl-L-carnitine Supplements

Cognitive & Memory Impairment/Alzheimer's Disease

Because the brain so sorely requires acetyl-L-carnitine to function properly, the thought has long been that supplementation may be of benefit in cognitive deficits and in dementia, especially since the supplemental form has been shown to be able to pass through the blood-brain barrier. Research in this area dates from 1990, when, in a clinical trial, the application of 1,500 mg/day of acetyl-L-carnitine over a period of 150 days was shown to produce cognitive/memory benefits in elderly persons with mental impairment, as against placebo. (Cipoli and Chiari.1990. *Clinica Terapeutica* 31[132] 6 Suppl: 479-510) In another trial, double-blinded and placebo-controlled, 2,000 mg/day of acetyl-L-carnitine versus placebo for three months in oldsters with mild dementia yielded statistically significant improvement in behavioral scales, in memory tests, in the

attention barrage test, and in the Verbal Fluency test. (Passeri et al. 1990. *International Journal of Clinical Pharmacology Research* 10[1-2]:75-79) In yet a third clinical trial published that year, 1,000 mg of acetyl-l-carnitine given twice daily vs. placebo resulted in an apparent trend for greater improvement in the treatment group with reference to short-term memory than in the placebo group. (Rai et al 1990. *Curr Med Res Opin* 1990;11[10]:638-47.)

In 1991, a double-blinded, placebo-controlled, randomized trial looked at the benefits of using acetyl-L-carnitine in 130 Alzheimer's patients. This careful study looked at 14 different outcome measures and found that those trial participants who were treated with acetyl-L-carnitine manifested slower rates of deterioration in 13 of the 14 outcomes over those given placebo. Statistical significance was reached for the Blessed Dementia Scale, logical intelligence, ideomotor and buccofacial apraxia, and selective attention. (Spagnoli et al. 1991. *Neurology* 41(11):1726-32) Then, a 1994 single-blinded clinical trial of 481 elderly patients with mental decline found that the use of acetyl-L-carnitine at 1500 g/day for 90 days resulted in a significant increase in the total score at the end of treatment, with improvement in memory and in the emotional-affective area and with positive results confirmed by the Hamilton Rating Scale. The behavioral-relational aspects evaluated by the Family Stress Scale showed a significant decrease in the total score after treatment. (Salivari and Neri 1994. *Drugs Exp Clin Res* 20[4]:169-76)

A double-blinded, placebo-controlled, randomized clinical trial was performed two years later on several hundred participants with a diagnosis of mild-to-moderate Alzheimer's Disease. This study, which lasted for one year, found early-onset patients aged 65 years or younger to decline more slowly than age-matched participants taking the placebo, but this was not true of late-onset patients. The study's authors concluded that Alzheimer's patients aged 65 and younger might benefit from acetyl-L-carnitine. (Thal et al. 1996. *Neurology* 47[3]:705-11) Another double-blind, placebo-controlled study published just two years later arrived at the same conclusion, but with the cut-off reckoned as 61 years or younger. (Brooks et al 1998. *Int Psychogeriatr* 10[2]:193-203)

A paper published four years later theorized that since alterations in membrane phospholipid metabolism occur in Alzheimer's Disease, acetyl-L-carnitine may be helpful because of being able to reverse those phospholipid changes. (Pettegrew and McClure 2002. *Expert Rev Neurother* 2[5]:647-554) An open study published a year later yielded the interesting result that the addition of acetyl-L-carnitine (at 2g/day for 3 months) to a drug regimen consisting of either donepezil or rivastigmine for mild Alzheimer's patients increased the response rate from 38% to 50%, indicating to the trial authors that this combination may be a useful therapeutic intervention in mild AD patients. (Bianchetti et al 2003. *Curr Med Res Opin* 19[4]:350-53) A meta-analysis published that same year looked at double-blind, placebo-controlled studies of acetyl-L-carnitine in Alzheimer's Disease and concluded that there was a "significant advantage" for acetyl-L-carnitine over placebo for the integrated summary effect and that beneficial effects were observed on both clinical scales and in psychometric tests, with the favorable results kicking in at three months and increasing over time. (Montgomery et al 2003 *Int Clin Psychopharmacol* 18[2]):61-71)

Peripheral Neuropathy

This is a painful condition resulting from damage to a nerve or nerves in the peripheral nervous system. It can be induced by diabetes, by chemotherapy, or by other means. Several double-blinded, randomized, placebo-controlled clinical trials (De Grandis. 2002. *Drugs R D* 3:223–231; Li et al. 2016. *J. Diabetes Investig* 7:777–785; Sun et al. 2016. *Exp Ther Med* 12[6]:4017-4024) and four meta-analyses (Evans, J. D. et al. *Ann Pharmacother*. 2008. 42[11]:1686-91; Li et al. 2015. *PLoS ONE.* 10:e0119479; Sima et al. 2005. *Diabetes Care.* 28:89–94; Di Stefano. 2019. *J Pain Res* 26;12:1341-1351) have confirmed the benefits of acetyl-L-carnitine in this condition. For chemotherapy-induced peripheral neuropathy, it was shown to be most effective for that which was paclitaxel-induced or cisplatin-induced, (Bianchi et al. 2005. *Eur J Cancer* 41[1]):1746-50; Maestri et al. 2005. *Tumori* 91[2]:135-8) but actually seemed to aggravate that which was taxane-induced. (Hershman et al. 2018. *Natl Cancer Inst* 110[6]:669-676)

Noting that acetyl-L-carnitine has demonstrated an antinociceptive effect in several experimental models of nerve pain, a 2007 discussion published in the medical journal *CNS Drugs* observed: "ALC is known to produce a strong antinociceptive effect when given after neuropathic pain has been established. ALC can also improve the function of peripheral nerves by increasing nerve conduction velocity, reducing sensory neuronal loss, and promoting nerve regeneration" (Chiechio et al. 2007. *CNS Drugs* 21 Suppl 1:31-8, discussion 45-6; cf. Degrandis 2007. *CNS Drugs* 21 Suppl 1:39-43; discussion 45-6; Sima. 2007. *CNS Drugs* 21 Suppl 1:13-23; discussion 45-6)

Fibromyalgia and Associated Depression

Fibromyalgia syndrome (FMS) is a chronic condition symptomized by myofascial pain, sleep difficulty, depressed mood, and daytime fatigue. Various etiological aspects have been identified, including HPA-axis dysfunction, mitochondrial dysfunction, magnesium deficiency, and antibodies to serotonin. Orthodox medical treatment is inadequate for this widespread syndrome, which is why many of the poor souls afflicted with it eventually turn to natural therapies for assistance.

L-carnitine and acetyl-L-carnitine have always been mainstays in my plan for these sufferers. I've observed that L-carnitine helps to support their overall and muscular energy levels, while acetyl-L-carnitine particularly provides mood uplift, but also improves a number of other complaints.

Scientific research is weighty in support of acetyl-L-carnitine's antifibromyalgic effect. For example, in a

randomized, placebo-controlled clinical trial published in 2007, 102 fibromyalgia patients were assigned either 2 capsules/day of 500 mg acetyl-L-carnitine or placebo plus one intramuscular injection of either 500 mg acetyl-L-carnitine or placebo for two weeks. For eight weeks thereafter, the patients took 3 capsules daily of either 500 mg acetyl-L-carnitine or a placebo. Outcome measures included the number of positive tender points, the sum of pain threshold, self-perceived stiffness, sleep, tiredness upon awakening, fatigue, musculoskeletal pain. Depression, and work status. The sense of pain and the number of positive tender points declined significantly and equally in both groups through the 6th week of treatment. By the next check-up at the 10th week, both parameters remained unchanged in the placebo group but continued to improve in the treatment group, with a statistically significant between-group difference. Such a between-group difference was also observed for depression and for musculoskeletal pain. (Rossini et al. 2007. *Clin Exp Rheumatol* 25[2]:182-8)

In a twelve-week clinical trial published in 2015, supplementation of acetyl-L-carnitine (500 mg, t.i.d.) was ranged against treatment with a prescription drug for 65 female outpatients with fibromyalgia syndrome. In the final analysis, acetyl L-carnitine proved efficacious in improving depressive symptoms, pain, and quality of life in the trial participants. (Lembruni et al. 2015. *Clin Exp Rheumatol*. 33[1 Suppl 88]:S82-85) A 2020 review of studies also found that acetyl-L-carnitine "significantly improved measures of pain" in fibromyalgics. (Lowry et al. 2020. *Nutrients* 12[9]:2664)

Non-Fibromyalgic Depression

One of the most pronounced and documented positive effects enabled by supplemental acetyl-L-carnitine is its antidepressant action. We have already seen this underscored in the several studies on fibromyalgia that we examined above. However, a number of studies in the scientific literature from the 1980s onward have attested to an antidepressant effect in individuals not afflicted with FMS, and especially in the elderly.

In a open, crossover study published in 1987, 24 geriatric patients hospitalized because of depressive syndrome were subdivided, according to Hamilton's Scale as modified for the aged, into low- and high-score subgroups. Over the study period of two months, half of the patients received acetyl-L-carnitine for 1 month and then a placebo thereafter while the other half received a placebo first and then acetyl-carnitine thereafter. The results evinced that the acetyl-L-carnitine treatment was highly effective and statistically significant in most subgroups, significantly modifying the depressive tendencies. (Tempesta et al. 1987. *Drugs Exp. Clin. Res.* 13:417–423) Three years later, another clinical followed 60 senile individuals aged 60-80 with dysthymic disturbances who were given a dose of 3 g/day of acetyl-L-carnitine or a placebo. The results revealed that the treatment with acetyl-L-carnitine induced a significant reduction in the severity of depressive symptoms in the trial subjects and that it also improved their quality of life. (Bella et al. 1990. *Int. J. Clin. Pharmacol. Res.*10:355–360) Then, in another study published also in 1990, 28 depressed patients between 70 and 80 years old were randomized into two homogeneous groups of 14 each, with one group receiving 500 mg of acetyl-L-carnitine, t.i.d., and the other group a placebo. The authors concluded that acetyl-L-carnitine was effective in counteracting symptoms of depression in these elderly patients, as manifested in the Hamilton Rating Scale for Depression and the Beck Depression Inventory, and by beneficial effects with regard to behavioral aspects. (Garzya et al. 1990. *Drugs Exp. Clin. Res* 16:101–106)

In a review published in 2014, it was noted that four randomized clinical trials demonstrated the superior efficacy of acetyl-L-carnitine over placebo in patients with depression, while two randomized clinical trials showed its superior efficacy over placebo in dysthymic disorder, and two other randomized trials evinced that it is equally effective as fluoxetine and amisulpride in the treatment of dysthymic disorder. (Wang et al. 2014. *J Psychiatr Res*. 2014 53:30-7)

A 2018 systematic review and meta-analysis investtigating the effects of acetyl-L-carnitine on depressive symptoms across randomized controlled trials came to the conclusion that the supplementation of such significantly decreases depressive symptoms compared with placebo or no intervention, while offering a comparable effect to that of classic pharmaceutical antidepressants and that with fewer adverse effects. The review also noted that its antidepressant effects seemed more pronounced in the elderly. (Veronese et al. 2018. *Psychosom Med* 80[2]:154-59) In a similarly positive vein, a 2018 review of studies on acetyl-L-carnitine noted that it produced a rapid antidepressant effect—more quickly than that produced by the antidepressant fluoxetine. (Acetyl-L-carnitine took one week to kick in, on average, it was noted, as opposed to two weeks for the pharmaceutical to do so.) The conclusion was that it "may represent a potential alternative to classical antidepressants" and that "in particular, the elderly population and patients with comorbid medical conditions that make them vulnerable to adverse drug effects could represent an ideal subpopulation for LAC administration." (Chiechio et al. 2018. *Int J Mol Sci* 19[1]:11)

I hope you have found this review of L-carnitine and acetyl-L-carnitine to be of interest and of value.

Proving Successful As a Student Despite Distractions

by Matthew Alfs, MH, RH (AHG), MWSHS director

The ancient Asian sage Lao Tzu once said: "The journey of a thousand miles begins with the first step." As a student of herbalism, you are on such a long—and sometimes arduous—pathway. That being the case, it is possible to get discouraged—especially with all of life's distractions. However, the reward for perseverance is great, namely, illumination of one of life's greatest mysteries: *The secret to health and long life*!

Truly, what wouldn't a wise person sacrifice for the knowledge of such? Jesus of Nazareth once emphasized the value of sacrifice for something precious by relating a stirring story of an insightful man who found 'a pearl of great price' and 'sold everything he had' to obtain it, knowing that what he was about to obtain was worth far more than anything else he had already possessed. In this regard, what could be more valuable than the vitality of body, mind, and spirit and the ability to help others to preserve such? After all, this *wholism* is the basis, not only of the world's health-care traditions, but of its great religions and philosophies as well.

So, then, dear student, we encourage you to persevere in your studies, not letting mundane matters crowd out your time. After all, "nothing will ever be accomplished," observed the noted English author Samuel Johnson, "if all possible objections must be first overcome." Therefore, set aside time for study and, barring genuine emergencies, use this time as planned.

"But, how can I find that time in the first place," you might wonder? In asking those students who've moved along most efficiently in the program how they've accomplished so much, we're received some helpful answers, a few of which we'd like to share with you here, directly below....

"I devote half of my hour-long lunch break to study." "I take a brief nap after work and then have one of the workbooks next to me on my bed, ready to go once I awaken and feel renewed in mind and spirit." "I study first thing on Sunday morning when I wake up, as I'm not rushed at this time." "My teen-age daughter reads portions of the Workbook to me as I'm washing dishes or folding laundry." "I pull out the lesson-question sheet at the end of the lesson I am studying, read through all of the lesson questions, and then I have it readily accessible as I come across lesson answers in my reading and proceed to jot down those answers down by pencil on the answer sheet. If I like, I can re-type those answers later and send them as an email attachment or just send that penciled lesson-answer sheet as is to MWSHS through the mail."

Whatever may work for you, dear student, we urge you to find your niche and to work at it wholeheartedly!

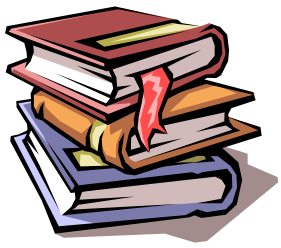
However, Lao Tzu, previously quoted, said something else that is worthy of consideration here: "People usually fail when they are on the verge of success. So give as much care to the end as to the beginning. Then there will be no failure."

Time and time again, we have witnessed the above observation prove true with students: As if they were in a foot race, they start off with a bang, but then burn out and fall to the wayside!

In this regard, please bear in mind that those of us here at MWSHS stand ready to offer you encouragement or suggestions whenever you feel the need for either or even if you're stuck somewhere in your studies and need some guidance. Such support is really part of your student package, and we are only an e-mail away. Please rest assured here, too, that we very much want you to prove successful in your studies and to move on to graduation. *That is why we are here*—not to mention that we love to brag about our graduates and how they go on to live and to share the valuable things that they have learned.

Finally, all of the alumni profiles that we publish in our newsletters are a marvelous way for you to glean some tips on how to prove successful in your studies, as the graduates profiled therein have all demonstrated a real stick-to-itiveness in their student paths and have been pleased to share their secrets of success with our student body by being profiled. One of our most enthusiastic and successful students put it this way: "Just don't put your studies off; once you sit down and open the books, they should grab your attention, as they always have mine."

We submit the above suggestions as some chief methods by which you may "give as much care to the end as to the beginning" so that "there will be no failure."



Book Reviews

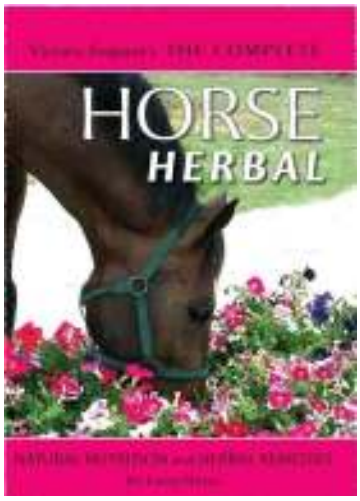
We hope that you enjoy the following reviews of three animal herbals by Amelia Gillard, who lives with her family on a farm in the upper Midwest, where she cares for horses, chickens, ducks, and cats.

Amelia's Preface to the Reviews

Dozens of bright flowers, bitter roots, and soothing leaves line the shelves of an apothecary, ready to brew or macerate to heal a person. What if these plants were full of worth to resolve ailments of the purring, curled-up cat or the horse frolicking in the field? Long ago, people learned about healing plants through watching wild creatures; so, in truth, there are thousands of similarities between healing animals and humans. Animals have the natural ability and gift to self-heal—more so than humans at this point in history since they still live close to nature. By learning to restore health to animal friends, much can be learned about herbalism, patient assessment, and nature, in great depth.

Ferguson, Victoria. *The Complete Horse Herbal* (Melbourne Publishing Group Pty Ltd, 2010), softcover, 380pp

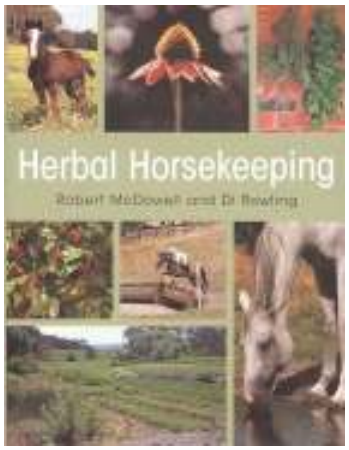
The Complete Horse Herbal is truly a book filled with a great myriad and wealth of knowledge. This tome covers both common and rare ailments afflicting horses, fully explores each body system, and describes crucial natural diets. Over three-dozen case histories scattered throughout the text create vivid mental pictures and a much more personal and tangible approach to equine herbalism. Every detail is broken down to a learnable level but is likewise terribly informative for the lifelong herbalist and equestrian. It is well researched, providing a series of scientific studies but also holding true to the heart of herbalism: treating the individual, preventing ill health in the beginning, and paying attention to minute and holistic details.



The book's author, Victoria Ferguson, who studied under the late Australian herbalist and iridologist, Dorothy Hall, is now a practicing herbalist in Australia. She wrote this book from a background of life-long experience. Among the plants she covers are Australian natives, as in eucalyptus and tea tree. However, she employs most of the common ones found in Western Herbalism today such as calendula, comfrey, chamomile, nettle, and vervain. Horses respond well to flower essences and essential oils, which in this book are covered in a usable depth in order to complement natural feeding and herbs. A unique method to learn from this book is the practice of treating the horse for a full blood cycle, or twelve weeks, and assessing the horse's specific nervous system type for complete healing.

To care for my horses, I use the knowledge from this book daily. I have had great success with the methods for healing horses with sarcoids, a skin tumor likely caused by toxins in the blood. A simple salve of red clover, burdock, bloodroot, and chaparral applied twice daily has quickly shrunken the black growth when accompanied with internal blood-cleansing herbs. The calendula and honey eyewashes have healed many an eye infection and honey has soothed several wounds. All around, this book is truly a staple with equines!

McDowell, Robert, and Di Rowling. *Herbal Horsekeeping* (Trafalgar Square Publishing, North Pomfret, Vermont, 2003), hardcover, 288pp



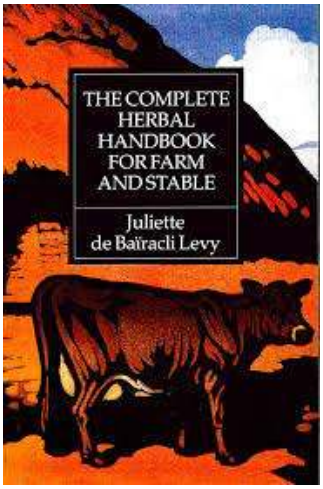
The main author, the late Robert McDowell, also studied under Dorothy Hall. Consequently, *The Complete Horse Herbal* and *Herbal Horsekeeping* are quite similar, but the latter employs several unique healing staples. For instance, the author is a proponent of Maritime pine, which is held in value for its strong antioxidant properties and high amounts of vitamin C. McDowell likewise uses colloidal silver as an all-around disinfectant. A fascinating subject broached revolves around nosodes—natural, homeopathic immune boosters. Recipes are laid out for less common afflictions such as roaring (which is the paralysis of a horse's larynx that creates such a sound) and herbs for a damaged jugular vein. This work is so clearly written that all of the knowledge gleaned from it has no trouble situating itself clearly in the mind for later use.

The advice I have found to be most useful in this well-written book pertains to preventative herbal medicine and whole-food nutrition. Horses are such sensitive creatures and they thrive with only the most natural care and living situations. The know-how to set up such an accommodation is covered in detail in this book. Some of the simple remedies I have needed to use most often are

Bach Rescue Remedy (a classic flower-essence formula) for any traumatic situation, chamomile tea washes for inflamed insect bites, and wormwood for endo- and ectoparasites. Most recently, I helped to heal our duck of a mysterious eye infection that was of the same type as had previously blinded our rooster permanently, which goes to show the vast range of herbal medicine over species. To encourage that healing, I had brewed a tea of celandine, calendula, and a small hint of garlic to be syringed as an eyewash according to this book's materia medica. From simple diets, explanations of incorrect horsemanship, and simple homeopathic remedies to advise for hardcore equine athletes, *Herbal Horsekeeping* covers it all and is a book well worth studying.

de Baïracli Levy, Juliette. *The Complete Herbal Handbook For Farm And Stable* (New York: Farrar, Straus and Giroux, 1991), softcover, 471pp

Decades after the first publication, the wisdom contained in this rare gem of a book is still as vital and relevant as it was before for horses, sheep, goats, cows, dogs, poultry, cats, and bees. The author, the much-beloved, late Juliette de Baïracli Levy, writes with grace and creates a special feeling around the knowledge she presents. When she was young, Juliette traveled the world and learned herbal lore from cultures from many countries and had immense success with the remedies she learned therefrom.



In this particular work, she covers dozens of gentle herbs that are all presented in an extensive materia medica, along with many ailments categorized in an easily searchable manner. Juliette gives colorful stories of success using natural nutrition and medicinal plants—all thoroughly outlined for the layman's use in her book. She was the one to pioneer the now commonly known plants such as kelp and garlic, but also taught about lesser-used but powerful herbs—one of her favorites being Southernwood.

I adore this book for its simplicity and applicability, and although not strictly about horses, not a speck of the material goes without use. Her recipes for natural rearing aromatic powders truly work for infections in both humans and farm creatures and I have been able to make effective but harmless fly sprays with the herbs listed therein. The ingestion of wood charcoal will quickly bind up toxins in the gut and prevent or resolve food poisoning, which I have found to be very true even in humans (although such a treatment should not be employed when pharmaceuticals are being used since charcoal might likewise bind them up). Other remedies I have used are: kelp and nettle to keep chickens laying, cayenne and wormwood for deworming cats, and antiseptic herbal powders for thrush in the hooves of horses.

This book is a wonderful introduction to the herbal, balanced care of animals, gardens, and all things to do with the farm or home because it will instill a love of creation and a detest for man's exploitation of the earth and of its inhabitants. This was one of the first books I studied to learn about herbalism and it truly opened my eyes to a greater extent to see the harmful effects of pesticides and other chemicals. All around, Juliette's work is perfect in which to delve, curled next to a crackling fire, in order to peek into nature—past and present—and to learn how to truly heal.

***Edible & Medicinal Wild Plants of the Midwest*, 3rd Ed., by Matthew Alfs (Minnesota Historical Society Press)**

Have you had occasion to add the new, revised and updated edition of MWSHS Director Matthew Alfs' *Edible & Medicinal Wild Plants of the Midwest* to your library as yet?

This beautiful, oversized book pf 372 pages, originally published in 2001 and then revised in 2013, is now back in print as a third, revised edition—this time by Minnesota Historical Society Press.

A much appreciated feature of this new edition is the integration of the many color photos (over 170!) in the book with the text, whereas before the photos were gathered together in an appendix and merely keyed to the text.

Please note that we have copies available here at MWSHS (see our website on how to order), but so may your local bookstore—the latter of which would no doubt very much appreciate your business in this era when visits to bookstores are progressively decreasing and such are struggling to stay in business. (Barnes & Noble stores in the Twin Cities area are also stocking the book.)

We hope that you have opportunity to obtain and to enjoy this new edition of a now classic work.

We print below some workshop credit slips for workshops that you may take from other teachers

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