
MWSHS Student Newsletter

Spring 2020

Our Alumni in Action: Dixie Sullivan

“I have always been passionate about herbs and human health,” explained Dixie Sullivan, a recent graduate of our Western-Herbalism Certificate Program.

“I discovered herbal medicine through nature and various books and podcasts,” she elaborated. “Then, in 2018, I attended my very first herbal conference and I felt invigorated and incredibly inspired by all of the energy, the people, and the work that they were doing with plants. The plant walks had special moments as well. During one walk, the teacher introduced us to an herb



called *pedicularis*. I felt drawn to it and, as she explained its medicinal properties and uses, my curiosity and fascination about this particular plant peaked. I researched and found out that it grows abundantly in the mountains around my home. I respectfully gathered some and made a tincture of it to quell my muscle tension and anxiety. It is now a staple in my herbal pantry and a strong herbal ally.

“I began to realize, however, that my herb nerd lifestyle needed guidance, structure, and refining from a respected herbal school. And so, I decided it was time to get out of the field and into the classroom! So I sought out the American Herbalist Guild’s website and sorted through the *long* list of herb schools there, ultimately discovering that MWSHS offered everything I wanted to learn about herbalism—and then some! This got me really excited and that’s how I made my choice.”

Dixie progressed well through the W.H. program, attributing her success to a very focused attention on the material—not letting her phone or social media get in her way. “When I got overwhelmed with any of the information, it was important to remind myself that it wasn’t all going to seep in at once because this material had been developed over a long period of time. It was a good reminder to slow down and to be proud that I was even taking this step on my plant path.”

Of late, Dixie has been utilizing her knowledge of healing herbs to heal and to teach. “I was able to assist in the healing of a close relative who had fallen from a rooftop and was recovering in the hospital. With staff permission, I massaged him with (*Continued in Column Two.*)

Late-2019 to Early-2020 Graduates

We offer congratulations to the following graduates of the Western-Herbalism Certificate Program:

Lisa Kofakis

Dixie Sullivan

We look forward to hearing more from these graduates as they apply their knowledge to life’s opportunities.

MWSHS Profile: Dixie Sullivan (*Continued from Column One*)

an herbal oil I had developed that consisted of St. John’s wort, calendula, comfrey, and fireweed. Then, just this last September, I held a class on herbal infusions using stinging nettle, oat straw and linden. Several people in the group commented that their energy levels and mood increased by drinking just one infusion.”

What are Dixie’s long-term goals? “Owning an herbal products business called Shiso Wild, LLC—which is currently gaining momentum, focused on herbal oils, teas and flower essences—and being a community herbalist. It’s my desire to be the bridge for people and plants, connecting them together to bring about harmony and health.”

In conclusion, Dixie shared these final thoughts with us: “Herbalism is a field you could study for several lifetimes and still not know everything. You probably never would, because nature is constantly changing. Yet, that’s part of its allure and magic for me: it’s a living art and science. Plants are the elders, our teachers, and carry the medicine to heal and to create optimal health and well being. I’m grateful and humbled by those folks keeping herbalism alive in our culture. My sincere thanks to MWSHS for keeping herbal medicine—the people’s medicine—alive and pushing me further along my plant path to see and to learn new things that I never would have experienced. My view of the world has completely shifted through this process—in the best way possible—and I know I’ll continue to use this for the rest of my life.”

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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 (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.

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

Special Announcement: Owing to COVID-19's blunting of many planned symposiums for 2020, we are going to allow the registration and viewing of virtual symposiums and conferences (see below) in 2020 to qualify for workshop credits for our Master-Herbalist Diploma Program. You will still need to prove your attendance by means of submitting a registration form providing complete info re: the presentations or we will need to receive an email, fax, or letter from the conference organizers for same. We are hoping to reschedule our own wildcrafting and herb-processing workshop (orig. scheduled for May) to August and our assessment-skills workshop(s) to the autumn; but, at this point, we can't say anything definite, as who knows where this unexpected series of events will lead us all?

MWSHS' May Workshop Has Been CANCELED Due to Continued Restrictions Upon Gatherings in Minnesota.

May 29th-June 1st, 2020. "*Medicines of the Earth Herb Symposium,*" This is a Virtual Symposium This Year. \$395. Over 40 Presentations, Including Wild-plant Walks, Which Qualify for MWSHS' Workshop Category #2, "Wild Plant Walks." For More Info, See the Website at www.botanicalmedicine.org.

July 26th-August 8th, 2020. *Green University's "Botany and Foraging Intensive," Gunnison, CO,* by Thomas Elpel (Author of *Botany in a day*), Kat MacKinnon, and Briana Wiles. \$900. (\$750 before July 1st). Some of Our Students Attended Last Year's Intensive and Have Spoken Very Highly of It, Feeling that it Greatly Enriched Their Lives. This Intensive Offers Options for Workshop Category #2, "Wild Plant Walks." and Workshop Category #3. For More Info or to Register, Visit the Website at http://www.greenuniversity.com/Class_Schedule/Botany_Foraging_Intensive.htm

"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.

Sept. 11th-13th, 2020. "*37th Annual Breitenbush Herbal Conference,*" **Detroit, OR.** For More Info, See the Website at www.herbalconference.net

Oct. 15th-19th, 2020. "*31st Annual Symposium of the American Herbalists Guild.*" This is a Virtual Symposium This Year. For more information or to register, visit www.americanherbalistsguild.com.

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Immunosupportive Herbs & Supplements

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

An understanding of how to support the optimal function of our immune system has never been more of a concern than now, in this spring of the year 2020. Out of immune crises like the present one, however, often comes greater knowledge of how our immune system works and how we can support its optimal function. This is what happened during the early days of the AIDS crisis, when a great deal of new information about thymus-educated lymphocytes emerged. Undoubtedly, we will learn much more about our amazing immune system from the coronavirus crisis as well.

Viruses represent a unique and very difficult challenge to the immune system—in several different ways. The goal of a virus is to get inside of a cell and to use that cell's machinery to reproduce itself and then to infect additional cells until a host is literally taken over. Viruses possess a spike that they use to penetrate a cell so as to be able to pour inside of it. Cells have little natural defense against this phase, although they can often release interferon to warn other cells of the invader so that such can heighten their defenses.

The study of history yields much valuable information on how herbs and nutrition have been, and can be, used to support immunity relative to viral attacks. Pandemics of time past yield especially crucial information. One example here is the Spanish Influenza of 1918, which killed over 50 million people worldwide (making the current pandemic a mere drop in the bucket by comparison). The Eclectic physicians here in America implemented a large variety of botanicals to combat this horrible contagion, but found none to be as valuable as our native boneset (*Eupatorium perfoliatum*). Then, too, the Washoe Indians of Nevada utilized a decoction of our native lomatium (biscuit root) (*Lomatium dissectum*) to great effect against this virus. (<https://www.lomatium.com/history.html>) Various parts of the elder (*Sambucus* spp.) have been used in both Eurasian and North American folk medicine to offset colds and influenza. Likewise, in Chinese medicine, herbs like astragalus (*Astragalus membranaceus*) honeysuckle (*Lonicera* spp.), forsythia (*Forsythia suspensa*), chrysanthemum (*Chrysanthemum morifolium*), Chinese skullcap (*Scutellaria baicalensis*), isatis (*Isatis tinctoria*), and others have been used to support the immune system in its efforts to ward off viral infections.

Modern science has shed light on the efficacy of each and every one of these herbs. With some of them (boneset and elderberry), it has revealed that they inveigh against the mechanisms by which viruses spill inside of cells. Other kinds of immune support that have been elicited from these, and other, herbs include an increase of phagocytosis (macrophage and/or neutrophil activity) in the innate immune system and an increase of various activities in the adaptive immune system, such as TH-1 enhancement and cytokine production and dispersal.

COVID-19 (SARS-CoV-2)

SARS-CoV-2 is a “novel,” or new, coronavirus causing an illness that the World Health Organization (WHO) has named COVID-19. The spike protein of this virus binds to a human cellular target's ACE-2 receptor, which is expressed in the respiratory system, the vascular system, the digestive system, and the genitourinary system. The host cell's protease then cleaves and activates the spike protein, which allows the virus to enter the cell. Once inside, the virus stimulates an inflammasome—a collection of protein receptors and mediators involved in the immune system's inflammation response. (Specifically, with coronavirus, this is an NLRP3 inflammasome.) The inflammasome then releases IL-1beta, a pro-inflammatory cytokine. In fact, SARS-CoV-2 can stimulate this and other cytokines to spiral out of control, resulting in what is known as a “cytokine storm”—which, if it does occur, usually strikes on day 10 of the disease as pneumonia onsets and the victim becomes, or finds himself already, a hospital emergency case.

The cytokine IL-6 also surges during the course of infection, while IL-10 and TNF-alpha markedly increase in severe cases. SARS-CoV-2 also progressively damages T lymphocytes (CD4+ and CD8+), the chief warriors of the adaptive immune system.—Chen et al. 2020. *J Clin Invest* Apr 13;137244. Epub ahead of print; Pedersen and Ho. 2020. *J Clin Invest*. <https://doi.org/10.1172/JCI137647>; Chen et al. 2020. *J Clin Invest*. <https://doi.org/10.1172/JCI137244>.

Chinese Herbs

Traditional Chinese Medicine (TCM) speaks of the *wei qi*, a defense system underneath the skin and flesh which some have suggested as being analogous to the immune system. Important herbs that support the *wei qi* include the

various medicinal mushrooms (reishi, etc.) and the root of astragalus. A classic Chinese formula combines astragalus with white atractylodes (*Atractylodes macrocephala*) and siler root (*Ledebouriella sesloides*) to produce the Jade (Wind) Screen [*Yu Ping Feng San (Wan)*], traditionally taken throughout the winter months to fortify the *wei qi*.

It is interesting to note that China's experience with COVID-19 has induced medical experts and officials there to urge that its citizens utilize a slightly modified Jade Screen—adding honeysuckle, tangerine (*Citrus reticulata*) peel, mist flower (*Eupatorium fortunei*), and dryopteris (*Dryopteris ceassirfizoma*) rhizome to the base formula—as a sort of “Prevention Phase” against the SARS-CoV-2 virus. (<http://passiflora-press.com/wp-content/uploads/Hubei-Formulas-1.pdf>) Another variant adds forsythia, patchouli hyssop (*Agastache rugosa*) and the moulting of cicada (*Cryptotympana atrata*) (yes, the bug!) to the three base herbs.

The chief herb in the base formula, astragalus, has been the subject of a great deal of scientific research and has been shown to support immune function in several ways, but especially by bolstering white blood cells. The entire base formula, on the other hand, has been the subject of a number of studies that have demonstrated that it can regulate inflammatory responses, support phagocytosis (esp. the activity of macrophages), and wage war against influenza by suppressing the activity of the enzyme neuraminidase, thereby inhibiting that virus' release and spread.—Du et al. 2015. *Phytother Res* 29(5):656-61; Yang et al. 2016. *Iran J Basic Med Sci* 19(9): 993–1002; Du et al. 2013. *PLoS One* 8(11):e78622

The *ShuangHuangLian* Formulation is a TCM herbal formula being tested via clinical trials in China for treatment of COVID-19 (Wang et al 2020. *Zhongguo Zhong Yao Za Zhi* 45[6]:1232-41) and one that is already showing impressive results via a case study report. (Ni et al 2020. *Front Med*. Mar 13 [Epub ahead of print]) It consists of 2 parts forsythia, 1 part honeysuckle, and 1 part Chinese skullcap. Flavonoids from the latter herb have even been shown to inhibit coronavirus-type inflammasome (NLRP3).—Luo et al. 2017. *Sci Rep* Nov 27; 7(1):16374.

The formula known as *Lian Hua Qing Wen* has perhaps been the most widely used prescription against both the 2002-03 SARS coronavirus and the current coronavirus. It consists of 13 herbs, one of which is ephedra, which is banned in the U.S. (Forsythia, honeysuckle, isatis, mint, rhodiola, and 7 others compose the rest of the formula.) Newly

published research has shown that it reduces SARS-CoV-2 viral replication and the release of inflammatory cytokines from host cells.—Runfeng et al 2020. *Pharmacol Res* 156. 104761

Some other popular TCM treatments for patients with SARS-CoV-2 are well enumerated by Dr. John Chen, PharmD, PhD, OMD, LAc, in a video, available from YouTube here: <https://www.youtube.com/watch?v=BGcsFzKLdTI>

(For those of you who might prefer a written summary of the formulas discussed, see this article by Dr. Chen: https://www.elotus.org/article/how-covid-19-2019-ncov-currently-treated-china-tcm?utm_source=newsletter&utm_medium=email&utm_campaign=coronavirus_article_20200220&utm_source=Newsletter&utm_campaign=4746425aa5-)

So far, TCM treatments in China have shown markedly positive results. By Feb. 17th, over 60,000 patients had been treated by TCM (about 85% of Chinese patients afflicted with the virus!). These treatments reduced hospital stays by a full 2 days in severe cases, whereas in milder cases hospital stays were reduced by 2.2 days and the clinical cure rate was increased by 33%.—Ren et al 2020. *Pharmacol Res* 155. 104743 Epub Mar 4

What, though, about the Western herbs we discussed at the beginning of this article? Here we find some good research also, although there is less of it than what we noted for the Chinese herbs—largely because of a lack of interest on the part of Western scientists to investigate them.

Western Herbs

Boneset

We've already mentioned boneset's key historical role in combating severe, feverish viral infections in early America. But the herb really didn't begin to be investigated scientifically until the 1980s. Scientists then discovered that boneset stimulates phagocytosis. (Wagner. 1985. *Arzneimittelforschung* 35[7]:1069-75; Wagner et al. 1985. *Planta Medica* 51:139-44; Vollmar et al. 1986. *Phytochemistry* 25[2]:377-81) However, it wasn't until just a few years ago that it was demonstrated that the herb disallows attachment of influenza A virus onto host cells, which it accomplishes by interfering with viral-induced hemagglutination. —Dersen et al 2016. *J Ethnopharmacol* 188:144-52

Although SARS-CoV-2 enters cells differently than does influenza, this is one herb that I always have on hand and will be using personally if I suspect that I've come in contact with someone who has the virus or if I felt I was starting to get sick with it. I have used it since the 1980s for a variety of viral infections and almost always with remarkable success.

There is animal research, however, demonstrating that boneset's European cousin, *E. cannabinum*, reduces IL-1beta, TNF-alpha, and IL-6—cytokines that spin out of control with coronavirus infection, as we've earlier noted. (Grigore et al 2018. *Turk J Biol* 42[4]:334-44) Extracts from our own American boneset have down-regulated IL-1beta, while a constituent, eupafolin, has specifically been shown to strongly inhibit IL-6 (the cytokine that especially surges as COVID-19 worsens).—Maas et al. 2011. *J Ethnopharmacol* 137(1):371-81; Wang et al 2013. *Evid Based Complement Altern Med* 591354, Epub 2013 Sep 2.

Elderberry

Like boneset, elderberry has played an historical role in influenza, although perhaps not so widely known as boneset's, in that the latter's has been connected with major epidemics and pandemics. But it does have more scientific research on its behalf.

In a clinical trial using an elderberry extract during an epidemic of influenza B virus in Israel, 93% of the 27 test subjects experienced symptom improvement in two days as opposed to that not occurring until day six in the placebo group; after just another day, a complete cure took place in 90% of the elderberry group, while the control group needed three more days to experience resolution! Moreover, the antibody count in the elderberry group was higher than in the placebo group. Using *in vitro* testing, the study researchers also discovered that elderberry inactivated ten different strains of influenza virus by disallowing their entry through the membranes of healthy cells. (Zakay-Rones et al 1995. *J Altern Complement Med* 1:361-69) A follow-up clinical trial with 60 persons primarily infected with influenza-A virus found pronounced improvement in 3-4 days compared to 7-8 days for the placebo group.—Zakay-Rones et al 2004. *J International Med Res* 32(2):132-40



Elderberry

A 2019 meta-analysis of randomized, controlled clinical trials found this botanical to “substantially reduce upper respiratory symptoms”

and so that “these findings present an alternative to antibiotic misuse for upper respiratory symptoms due to viral infections, and a potentially safer alternative to prescription drugs for routine cases of the common cold and influenza.”—Hawkins et al 2019. *Complement Ther Med* 42:361-61

Lomatium

We've already noted that a decoction of lomatium root was used by the Washoe Indians to offset the 1918 influenza pandemic, and that with remarkable success. Until recently, however, no research demonstrated any possible mechanisms by which lomatium could have served as a bulwark against influenza. Yet, in 2014, a research paper was published in the *Journal of Restorative Medicine* demonstrating that a decoction of the root inhibited CXCL10 secretion of human bronchial epithelial cells, a major factor in a poor prognosis for influenza. (Zamecheck & Wenner. 2014. *Journal of Restorative Medicine* 3:104-11) Of further relevance is that persons who develop acute respiratory distress syndrome (ARDS) after infection with other severe respiratory viruses, such as coronavirus, manifest unusually high levels of this CXCL10, leading researchers to the conclusion that this T-cell chemoattractant chemokine exacerbates respiratory infections.—Ichikawa 2013. *Am J Respir Crit Care Med* ;187(1):65-77. Epub 2012 Nov 9.

What was particularly notable about the 2014 study cited above was that a decoction was used, as per the usage by the Washoe Indians, and not a tincture—the form of the herb that is most widely available on the market and typically used by herbalists, but which has produced a full-body rash in a number of individuals (thought to be due to its concentration of resins). For pictures of the rash and a case study, see <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5962321/>

Nutrition

Let's now look at some of the research on key nutrients for immunity.

Vitamin C

Vitamin C's functions in the immune system are vast and varied. It has been shown to support phagocytosis, boost production of interferon, promote the maturation and proliferation of T cells and to modulate their function, help form antibodies, inhibit viral replication, and even inhibit NLRP3 inflammasome and NF kappa-B.—Carr and Maggini. 2017. *Nutrients* 9:1211; Sang et al 2016. *Inflammasome* 2:13-19;

A good deal of research has uncovered plasma deficiencies of vitamin C in the average critically ill patient and even more so in septic

patients. (Nabzyk & Bittner 2018. *World J Crit Care Med* 7(5):52-61) It should come as no surprise, then, that when septic patients were intravenously administered 1.5 g of vitamin C every six hours plus 200 mg of thiamine every 12 hours and 50 mg of hydrocortisone every 6 hours, a reduction in deaths to only 8.5% was achieved vs. a historic toll of 40.4% as a control! (Marik et al. 2017. *Chest* 151:1229-38) A 2018 meta-analysis of studies on the application of intravenous vitamin C to septic patients concluded that “pooled analyses demonstrated a marked reduction in mortality and duration of vasopressor administration in the group with the use of vitamin C.” —Li 2018. *Crit Care* 22:258. Epub Oct 11

Fortunately, in the current coronavirus crisis, hospitals in Shanghai, China have been administering vitamin-C intravenously since mid-March, with excellent results, which encouraged physicians in New York’s largest hospital system to do the same, providing 6-7 grams intravenously over a period of a day. Dr. Andrew G. Weber, a pulmonologist and critical-care specialist with two of these hospitals on Long Island, told the press that these patients “did significantly better than those who did not get vitamin C.” (*New York Post*, 24 March 2020) Andrew Saul, PhD, one of the world’s foremost experts on vitamin C, shared with readers of *Whole Foods Magazine* that three clinical trials using intravenous vitamin C for COVID-19 are currently being conducted in China.—<https://wholefoodsmagazine.com/columns/vitamin-connection/vitamin-c-and-the-immune-system-nutritional-fortification-to-support-defenses-against-viruses/?fbclid=IwAR3YZxbF69fvVpUNos6U9pvwLvXTXPYTI0P1RBhFRH1OC74zLTx8gHrdsiY>

While intravenous vitamin C may be the treatment of choice with hospitalized patients, oral vitamin C has shown significant benefits as an immunosupportive agent prior to, and even during, respiratory infections. For example, it has been shown to relieve symptoms of upper respiratory infections and to shorten the duration of such, as well as to reduce the risk of developing pneumonia (by 80%!). (Hemila. 1997. *Pediatr Infect Dis J* 16[9]:836-7; Hemila & Douglass 1999. *Int J Tuberc Lung Dis* 3[9]:756-61; Vorilhon et al. 2019. *Eur J Clin Pharmacol* 75[3]:303-11) In a clinical trial of 463 students given 1000 mg of supplemental vitamin C, tid, cold-and-flu symptoms were reduced by a remarkable 85%. (Gorton & Jarvis. 1999. *J Manipulative Physiol Ther* 22[8]:530-33) Then, too, a 2018 meta-analysis of 9 placebo-controlled, randomized clinical trials found that when extra vitamin C was taken during a cold to boost a daily vitamin-C supplement, it reduced the cold’s duration, shortened the time confined at home, and

relieved chest pain and chills.—Ran et al. 2018. *Biomed Res Int* July 5:e1837634

Vitamin D

MWSHS students know, from their coursework, that vitamin D enables monocytes to differentiate into macrophages—crucial phagocytic warriors of the innate immune system; also, that it modulates cytokines that are produced by the acquired immune system. Research over the last decade-and-a-half, however, has revealed additional ways in which vitamin D supports immunity: One of these is that it supports the presentation of antigens to T lymphocytes for action against the former. Another is that vitamin D metabolites regulate the production of specific antimicrobial proteins that annihilate pathogens and thus reduce infection in the respiratory system and elsewhere.—Gombart. 2009. *Future Microbiol* 4:1151; Greiller and Martineau. 2015. *Nutrients* 7:4240–4270.

In fact, a 2017 meta-analysis of 25 randomized controlled trials came to the conclusion that vitamin D definitely helped prevent acute respiratory infections. (Martineau et al. 2017. *BMJ* 356:i6583) A 2012 meta-analysis that came to similar conclusions (Charan et al. 2012. *J Pharmacol Pharmacother* 2012;3[4]:300-03) and a 2010 clinical trial revealing that vitamin D supplementation reduced risk of influenza in school-children (Urashima et al. 2010. *Amer J Clin Nutr*; 91[5]:1255-60) so impressed former CDC director Tom Frieden that he cited them both in an opinion piece for FOX news that he wrote on March 23rd entitled “Coronavirus Infection Risk May Be Reduced by Vitamin D.”—<https://www.foxnews.com/opinion/former-cdc-chief-tom-frieden-coronavirus-risk-may-be-reduced-with-vitamin-d>

But there is more: A 2019 analysis that looked at 21,000 participants across eight studies found that those who had an insufficient vitamin-D level had a 64% increase of community-acquired pneumonia. (Zhou et al. 2019. *Medicine*. 98:38: e17252) Then, in persons with respiratory infections so advanced that ventilator use is required in an intensive-care setting, research has shown that a high dose (500,000 IU) of vitamin D can significantly reduce hospital stays. In one trial of such patients in Georgia, this dosage *cut in half* the length of their hospital confinement!—Han et al 2016. *J Clin Transl Endocrinol* 4:59-65)

Vitamin-D deficiency is widespread in northern climates and particularly among the elderly dwelling in assisted-living centers and nursing homes, (Looker et al. 2011. *NCHS Data Brief*. Mar 59:1–8) which comprise the largest group of individuals who have died during the pandemic in my home state of Minnesota (223 out of 286

deaths as of April 28th). It is absolutely essential that oldsters in these habitations, then, take vitamin-D supplements during this spring-summer of government-forced cocooning around the world. Yet, in a recent study of Irish seniors, it was revealed that only 11.5% took a vitamin-D supplement during the winter months! (<https://www.doi.org/10.38018/TildaRe.2020-05>)

Unfortunately, even those who do take vitamin-D supplements in long-term care facilities typically don't use enough: A study of residents 65-yo and up in long-term-care facilities in Arkansas found that one-half of those residents taking 400-800 IU/day still showed deficient levels (under 30ng/mL). (Hamid et al 2007. *J Am Med Dir Assoc* 8[2]:71-5. Epub 2006 Oct 27) Understandably, then, a review in the scholarly journal *Nutrients* advises: "To reduce the risk of infection, it is recommended that people at risk of influenza and/or COVID-19 consider taking 10,000 IU/d of vitamin D3 for a few weeks to rapidly raise 25(OH)D concentrations above 40-60 ng/mL (100-150 nmol/L)."—Grant et al 2020. *Nutrients* 12:988

We now have preliminary data from a very important study of 212 hospitalized COVID-19 patients spread among three separate hospitals in Southern Asia where vitamin-D status was carefully correlated to severity of infection. This study, by Mark Alipio from Davao Doctors College in the Philippines, found that the average vitamin-D level among all patients was only 24 ng/ml, or 6 ng/ml below the bottom end of the normal range. Moreover, 86% of cases with normal vitamin-D levels were mild, but 73% of all cases with subnormal levels were severe or critical! These findings have been put into a preprint letter to a medical journal and are awaiting peer review—<https://www.grassrootshealth.net/blog/first-data-published-covid-19-severity-vitamin-d-levels/> For the text of the letter: <https://www.grassrootshealth.net/wp-content/uploads/2020/04/Alipio-Vit-D-COVID-Severity-Preprint-04-22-2020.pdf>

Zinc

Zinc is vital to immune function: it supports macrophage function and cellular immunity and regulates inflammatory cytokines. (Maares and Haase 2016. *Arch. Biochem. Biophys* 611:58–65; Gammoh and Rink. 2017. *Nutrients* 9[6]:24; Fraker et a. 2000. *J Nutr* 130 [5S Suppl]:1399S-1406S; Gao et al 2018. *J Immunol Res* Epub Dec 6; 6872621) Unfortunately, zinc insufficiency is not uncommon among Americans and especially the elderly. (Prasad et al 1993. *Nutrition* 9[3]:218-24) This is most likely owing to its low concentration, or even lack, in the foods commonly eaten. However, phytates occurring in grains that are consumed concurrently with zinc-containing foods can inhibit zinc's absorption. (Hunt et al. 2008. *Am J*

Clin Nutr. 2008. 87[5]:1336–45; Lonnerdal. 2000. *J Nutr* 130[5]:1378s–83s.) Another impediment is that some individuals, and more often than not seniors, lack sufficient stomach acid to liberate zinc from foods.—Wood and Serfaty-Lacrosniere. 1993. "Effects of Gastric Acidity and Atrophic Gastritis on Calcium and Zinc Absorption in Humans," in Holt, P. and Russell, R. eds. *Chronic Gastritis and Hypochlorhydria in the Elderly*. Boca Raton, FL: CRC Press, 187-204

Such an insufficiency in zinc levels leads to an overproduction of pro-inflammatory cytokines such as IL-1beta, IL-6, and tumor necrosis factor (TNF)-alpha—the very cytokines that tend to run wild in COVID-19, whereas supplementation with this mineral has been shown to decrease these cytokines.—Gammoh and Rink. 2017. *Nutrients* 9(6):24; Prasad et al. 2004. *Free Radic. Biol. Med.* 37:1182–119

Studies show that zinc supplementation also reduces the duration and severity of viral infections (including a 41% reduction in pneumonia) (Fischer Walker & Black 2004. *Annu Rev Nutr* 24:255-75), and most prominently in seniors. (Prasad et al. 2007. *Am J Clin Nutr* 85[3]:837-44; Fraker et a. 2000. *J Nutr* 130 [5S Suppl]:1399S-1406S) A number of different mechanisms have been identified as to how zinc inveighs against viruses. (Read et al. 2019. *Adv Nutr* 10[4]: 696–710; Lyu et al. 2017. *J Virology* 91[2]) One important manner is that it can inhibit replicase (RNA-dependent RNA polymerase), an enzyme translated from coronavirus' RNA and necessary for that virus to replicate.—te Velthuis et al 2020. *PLoS Pathogens* 6[11]:e1001176

However, zinc must first get inside of a cell in order to do its good work there. Because it is hydrophilic, however, it does not readily pass through lipid-based cell membranes. Specialized proteins in the body are designed for this task; but it is not often an entirely sufficient process, at least as far as what may be needed for viral inactivation. However, various transporters, or ionophores, can facilitate zinc's entry into a cell, enabling it to effectively block viral replication. (te Velthuis et al 2020. *PLoS Pathogens* 6[11]:e1001176) The drug being discussed in the media and undergoing clinical trials, chloroquine, is a zinc ionophore, targeting zinc to the interior of cells. (<https://www.excelmale.com/coronavirus-treatment-can-an-old-drug-plus-zinc-be-the-answer/>) Yet, there are natural agents—widely distributed in foods and also available as supplements—that can act as zinc ionophores, including quercetin (see immediately below) and EGCG (see later below).

In the diet, zinc can be found in seeds (pumpkin seeds are highest), nuts (almonds, cashews), seafood (esp. oysters, lobster, shrimp and Alaskan crab), and meat (beef, pork). In order to effectively support immune processes against a possible infection, it appears that dosages of 40-120mg/day are needed. (Bear in mind that

dosages above 60mg/day can reduce copper levels, which would require an increased intake of copper from food or from supplements)—<https://chrismasterjohnphd.com/covid-19/what-is-the-best-dose-of-zinc-for-covid-19-prevention>

Other Natural Compounds

Quercetin, the most widely distributed flavonoid in fruits (e.g., apples) and vegetables (e.g., yellow onions), has demonstrated broad antiviral effects (e.g., against influenza, common cold, RSV, HSV-1, hepatitis B & C, the SARS virus of 2003, and even Ebola) in published studies. (Wu et al. 2015. *Viruses* 8(1):E6; Kim et al. 2010. *Antiviral Res* 88[2]:227-35; Vaidya et al. 2014. *J Agricultural and Food Chem* 64[21]:4416-25; Kinker et al. 2014. *J Anc Dis Prev Rem* 2014, 2:2; Li et al. 2004. *J Virology*. 78[20]:11334-39; Somerville et al. 2015. *Adv Nutr* 7[3]:488-97; Qiu et al. 2016. *Antimicrob Agents Chemother* 60[9]:5182-5188) It has even been shown to modulate coronavirus-type inflammasome (NLRP3) and the release of pro-inflammatory cytokines and histamine.—Yao et al. 2016. *Nutrients* 8(3):167; Yi. 2018. *Mol Nutr Food Res*. 62(13):e1800147; Sun et al 2017 *J Interferon Cytokine Res* 37[10]:449-55; Tozser & Benko. 2016. *Mediators of Inflammation* 5460302

Quercetin is a zinc ionophore, assisting that nutrient to get into cells to manifest its protective effects there. (Dabbagh-Bazarbachi 2014. *J Agric Food Chem* 62[32]:8085-93) Of enormous interest here is that a joint Canadian-Chinese clinical trial using quercetin for coronavirus is underway, with an anticipated end in July of the present year.—<http://www.mcgilltribune.com/sci-tech/montreal-researchers-propose-a-treatment-for-covid-19-170320/>

In the meantime, though, quercetin is available as a supplement, and quite inexpensively at that. However, without co-factors such as can be found in many of the foods that contain this flavonoid, the supplemental form is poorly absorbed. Vitamin C and bromelain are two co-factors that increase absorption, however, and combinations of quercetin with each of these compounds are available on the supplement market. In fact, one of the more important studies on quercetin also used vitamin C as an adjuvant and found that this combo suppressed reactive oxygen species (ROS) and NLRP3 inflammasome.—Choe et al 2017. *Inflammation* 40(3):980.

EGCG

Epigallocatechin-gallate, or “EGCG” for short, is a component of green tea that has undergone a great amount of scientific investigation. Some of this research has focused on its effects against a wide range of viruses, which it enacts largely by inhibiting the early stages of infection—viral attachment, entry, and membrane fusion. (Kaihatu et al. 2018. *Molecules*

23[10]:2475; Hsu 2015. *Inflamm Allergy Drug Targets* 14[1]:13-18; Ge et al 2018. *Antiviral Res* 158:52-62) It is yet another natural agent that can suppress the NLRP3 inflammasome stimulated by coronavirus. (Tozser & Benko. 2016. *Mediators of Inflammation* 5460302. Epub 2016 Sep 8) As a zinc ionophore, (Dabbagh-Bazarbachi 2014. *J Agric Food Chem* 62[32]:8085-93), its antiviral activity may partly ensue from its ability to bring zinc into cells.

Aside from being a component of green tea, EGCG is available as a supplement from a number of companies.

Lactoferrin

Lactoferrin, a substance secreted in human breast milk and in cow’s milk, has potent immune benefits and has even demonstrated antiviral effects in studies. (Wakabayashi et al. 2014. *J Infect Chemother* 29[11]:666-71) It especially supports TH-1 cytokine responses, including the production of killer (cytotoxic) T cells, warriors that exterminate virus infected cells. This is interesting in that some who have worked with coronaviruses for many years, such as Ben Neumann PhD from Texas A&M University-Texarkana, have observed that sufferers who do well manifest a strong killer T-cell response whereas those who do not fare well lack such an adequate response.—<https://finance.yahoo.com/news/coronavirus-actually-behaves-inside-body-183000456.html>

Propolis

If you’re a fan of bees, as I am, then you know about propolis, a substance that bees use to coat their hive to protect it against infection. In 1987, Bulgarian scientists demonstrated that propolis supports cellular immunity. (Manolova et al 1987. *Acta Microbiol Bulg* 21:76-81) Numerous studies have since evinced that it exerts marked activity against Herpes-family viruses, especially via topical application. It has also been shown to inveigh against both the Avian influenza virus and HIV.—Kujumgieva et al. 1999. *J Ethnopharmacol* 64(3):235-40; Gekker et al 2005. *J Ethnopharmacol* 102(2):158-63

Of especial interest are the pronounced effects against respiratory infections that have been elicited from propolis, enabling it to serve as “a valuable option for therapy of upper respiratory pathogens,” as determined by the authors of a 2007 study. (De Vecchi et al. 2007. *Infez Med* 15[1]:7-15) This may partly be because it is rich in flavonoids, including quercetin. In one study in which the flavonoid components of propolis were tested against various viruses, the quercetin component reduced infectivity and intracellular replication of viruses, including coronavirus.—Debiaggi et al 1990. *Microbiologica* 13(3):207-13

Gut Health, Healthful Foods, and Junk Foods

The friendly intestinal bacteria in our gut are known to regulate immune activity—stimulating cellular immunity’s TH-1 cells early in the adaptive immune response and then damping down that response when it needs to be turned off. Foods rich in these beneficial bacteria include kefir, kimchi, kombucha, sauerkraut, and yogurt. All of these should be free of added sugars, of course, because sugar robs the body of nutrients, damages the cardiovascular system, and advances dysglycemia—conditions that, if they exist in a person who gets infected with coronavirus, have been shown to worsen the prognosis, as is widely being publicized.

Supplementing with probiotics has been shown to reduce the frequency and duration of upper respiratory infections.—Lenoir-Wijnkoop et al 2019. *Front Pharmacol* Aug 28; 10:980

Adequate protein is essential to innate immunity, too, and deficiency of such markedly impairs this bulwark against infection. Most holistic nutritionists advise that protein intake in grams should be approximately one-half one’s weight in pounds.

Endocrine Health: Melatonin

As you will remember from your coursework, the hormone melatonin, which most people think of only as a sleep hormone, is crucial to immune function and supports TH-1, the lymphocyte that fires the arm of your immune system that fights infections and cancer. (This is why night workers who sleep during the day have been shown to come down more often with cancer than night sleepers and why electromagnetic frequencies are so detrimental to our health in that they reduce levels of this hormone in the body.) Melatonin has also been shown to reduce the coronavirus inflammasome, as well as NF-kappa B, one of the inflammatory cytokines that is upregulated in COVID-19, as we have earlier noted. (Favero et al 2017. *Int J Endocrinol* 1835196; Zhang et al. 2020. *Life Sci* 250: 117583.) Since levels of this hormone decrease with age and since children possess much higher levels than adults, it has been proposed that the reason why COVID-19 deaths occur chiefly among adults (and esp. older adults) as opposed to children is because of this physiological difference.—See detailed information on his in an excellent article by Doris Loh at <https://www.evolutamente.it/covid-19-pneumonia-inflammasomes-the-melatonin-connection/?fbclid=IwAR2IDAtz-jfudtFaQFSvk0bcftqEz9DXkC2fMmhu6gCx5IJcivFVOcxBh2c>

Maximizing one’s melatonin capacity, then, is an invaluable immune strategy. This can be done by sleeping in as dark an environment as possible and by removing all sources of EMF from the bedroom (incl. turning off Wi-Fi’s during the night and not sleeping near, or with, a cellular phone).



In addition to these practices, two clinical trials examining the intake of tart (sour) cherry juice found an increase in melatonin levels (in the latter trial by improving tryptophan bio-availability for synthesis of serotonin, melatonin’s precursor), leading to a longer night’s sleep. (Howatson et al 2012. *Eur J Nutr* 51[8]:909-16; Losso et al. 2018. *Am J Ther* 2018 25[2]:e194-e201) Contrariwise, there is currently no evidence that taking melatonin as a supplement does any good for maximizing immunity during the present crisis. Moreover, taking a hormone when one’s endocrine system can still produce that hormone may actually be confusing and even detrimental to that system’s self-regulating mechanisms and thus to homeostasis as a whole.

Afterthoughts

In view of the wealth of information provided above, it gives one pause to wonder why our nation’s governmental and medical authorities are not informing the public about the importance of supporting optimal immune function. Washing hands and social distancing only goes so far, as we are witnessing by the increasing number of deaths, especially among the more vulnerable members of our society who are locked down in nursing homes and assisted-living centers and without adequate testing of their vital immune nutrient levels.

The research above, then—showing how vitamins, minerals, gut health, endocrine health, and diet can favorably impact immune function

and how TCM herbal formulas are changing the face of the coronavirus' impact—would seem to be vital, life-saving information that should not be ignored.

In a recent paper, “Optimal Nutritional Status for a Well-Functioning Immune System Is an Important Factor to Protect against Viral Infections,” published in the scholarly journal *Nutrients*, an international team of nutritional researchers summed up their paper’s presentation this way: “The present situation with SARS-CoV-2 infection and severe outcomes of COVID-19 and the annual morbidity and mortality figures for respiratory infections overall make it clear that these practices [vaccinations and hygiene measures] alone are not sufficient....As such, additional safe and cost-effective strategies are needed to support the immune system, and further protect individuals and populations from harm. One compelling strategy is to provide sufficient nutritional support for the immune system....We, therefore, strongly encourage public health officials to also include nutritional strategies in their arsenal to improve public health and to limit the impact of seasonal and emerging viral infections.”—Calder et al. 2020. *Nutrients* 12(4), 1181

Will public health officials take such encouragement to heart? So far, they have utterly failed to do so. But, then, natural immune support does not make money for Big Pharma, to which many of our health and legislative authorities seem beholden. What would make money—and big money at that—would be a vaccine, especially if such is government mandated (many billions of dollars—even trillions, by some estimates!). Not only that, but because of a law passed in the 1980s, Big Pharma cannot be sued for any harmful effects that might accrue to individuals from vaccines, as it can for injuries from other drugs (and it is bleeding from judicial decisions relating to these other pharmaceuticals, which are multiplying like rabbits and resulting in increasingly higher damages).

A vaccine, however, is at least 6-12 months away and will most likely be fast-tracked at that time—if some proponents have their way—ignoring crucial safety tests. The question is, then: *how many more precious human lives will be lost in the interim* while our governmental and health officials shamefully ignore, and even pooh-pooh, immunosupportive techniques?

New, Revised, Edition of *Edible & Medicinal Wild Plants of the Midwest* (by Matthew Alfs) to Be Released in August

MWSHS Director Matthew Alfs’ book, *Edible & Medicinal Wild Plants of the Midwest*, which was originally published in 2001 and then revised in 2013, recently went out of print in anticipation for a third, revised edition to be published in August of this year. We are happy to report that that third edition will be published by Minnesota Historical Society Press (MHSP).

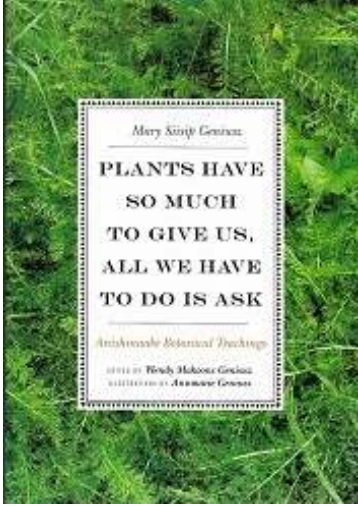
A much appreciated feature of this new edition will no doubt be the integration of the many color photos with the text, whereas before the photos were gathered together in an appendix and keyed to the text. Then, too, one-half of the plant profiles in this third edition have been updated with new information gleaned from scientific studies performed during the intervening years since the second edition was published, as well as from the author’s own utilization of the plants over that same period of time.

We will, of course, have copies available here at MWSHS. (Our alumni will no doubt remember that the first two editions of the book were available from the School as an auxiliary text for accessing pertinent information while completing the Master-Herbalist or Western-Herbalism Program.) However, feel free to order the book directly from Minnesota Historical Society Press or from your local, independent bookstore.



Book Review

Geniusz, Mary Siisip. *Plants Have So Much to Give Us, All We Have to Do Is Ask* (Univ. Minnesota Press, 2015), softcover, 373pp



Mary Siisip Geniusz (1948-2016) was a teaching assistant and an apprentice to Keewaydinoquay, a renowned Anishinaabe medicine woman and ethnobotanist who taught at the University of Wisconsin--Eau Claire in the 1980s. In *Plants Have So Much to Give Us, All We Have to Do Is Ask*, Geniusz, shares the Anishinaabe understanding and appreciation of edible and medicinal wild plants with vibrant stories that touch the heart and move the soul.

Geniusz—herself of Cree and Metis descent—sheds light on the personality and power of dozens of herbs by means of her unique approach: Boneset, ground ivy, jewelweed, uva ursi, thuja, yarrow, plantain, Labrador tea, mullein, juniper, wild rose, violet, wild mint, wild bergamot, and numerous others come alive in this treasure of a treatise. The chapter on birch, the second most sacred tree to the Anishinaabe, was especially informative and inspiring to me. (Did you know that lightning never strikes a birch tree? The author explains why.)

A valuable appendix provides recipes for edible plants and preparations for medicinal plant applications.

The book is edited by Geniusz' daughter, Wendy Makoons Geniusz, an assistant professor in the Department of Languages at the University of Wisconsin-Eau Claire, who added an appendix on Ojibwe terms that are scattered throughout this wonderful work.

News, Thoughts, & Musings

As the COVID-19 pandemic continues to rage and to affect people and businesses adversely, we wanted to make you aware of some important changes and developments here at MWSHS...

First of all, like many small businesses have needed to do, we have temporarily reduced staff—from six persons to two persons during the balance of this spring and summer. The two of us who are still active are working principally from our homes. What this means is as follows:

- You can expect delays in answers to your emails.
- You can expect delays in the grading of your lessons—from the typical 6-8 weeks we had previously needed to 10-12 weeks, with a gradual reduction in that time period as we move into July and August.
- You can expect delays in receiving your final-grade documents, certificates, and diplomas.
- If you are a new student awaiting your programs, you can expect delays in receiving them (from 30 days to 40 days).
- Our *spring workshops have all been canceled*. However, we hope to reschedule them in late summer or in the autumn. In the interim, *please note our adjusted policy on attendance at virtual symposiums and seminars*, on page 2 of this *Newsletter*.

Please know that we *greatly* appreciate your patience and understanding during this temporary situation.

A few additional thoughts: Some of you have written to us, noting that you have *purchased a new computer that does not have a CD drive* and are wondering how to answer the lesson questions from your CD. In such a case, please be aware that *the lesson questions are replicated in your workbooks*, at the end of each lesson. Many students already utilize those to answer the questions there *by hand* and then to mail, fax, or image-and-email those pages to us, and that is an option for you. (We return these graded lessons by U. S. Mail so that you can return them to your workbooks and then study them for your upcoming exam.) If, for any reason, that is just not possible for you, email us to that effect and we will arrange to email the lesson questions to you (again, though, bear in mind that this may take some time, in view of our reduced staff and backed-up emails, etc.).

