



Herbal Companies Brace for Supply Chain Impacts of COVID-19

By Karen Raterman

Editor's note: This article reports on market conditions as of mid-April 2020 for herbal ingredients and products. The American Botanical Council (ABC) is not recommending any of the mentioned botanical ingredients as remedies to prevent or treat coronavirus disease-2019 (COVID-19).

On March 11, 2020, the World Health Organization (WHO) declared the outbreak of the novel coronavirus, SARS-CoV-2, a global pandemic. By the end of March, about one-third of the world's population was under some form of quarantine or public lockdown, and the virus has prompted a tsunami of disruptions to the global economy.¹

The pandemic has had ripple effects across every economic sector, as companies and workers have halted travel and adapted to the new reality of “nonessential” business closures, supply chain interruptions, and nationwide stay-at-home orders. It is an unprecedented event for most people and has the potential to forever change life and business.

For the herbal products industry, the impacts are no less profound. The early stages of the crisis have been a roller coaster ride of trying to interpret and anticipate potential disruptions to the herbal supply chain, which is dependent to a significant degree on China, the early epicenter of the outbreak. This has been further complicated by more recent impacts on other key herbal supply regions, such as India and Europe. As alarm about the virus grew, so did the demand for herbal immune enhancers, wellness formulas,

traditional medicines, and botanical ingredients ranging from echinacea (*Echinacea* spp., Asteraceae) and elderberry (*Sambucus nigra*, Adoxaceae) fruit to turmeric (*Curcuma longa*, Zingiberaceae) root and rhizome. The result may be a perfect storm for the herbal industry and could have lasting impacts on how and where product manufacturers source their botanical ingredients.

As of this writing, companies are striving to calmly look forward, get ahead of the curve, and prepare for what's next as the impacts of the global pandemic escalate. It is a rapidly changing situation, but many herbal and dietary supplement company representatives believe that things will likely get worse before they get better.

“As we know, the herbal industry is very much dependent on global supply chains, and especially the botanicals that are trending with consumers and growing at a fast pace,” said Ajay Patel, founder and CEO of Verdure Sciences, an Indianapolis, Indiana-based supplier of botanical extracts that are manufactured in India (email, March 26, 2020). With the COVID-19 disruptions in regions like China, India, and Europe, he said, “it has already become evident

that suppliers are not able to cope with the current demand, let alone future demand, which is expected to grow considering current market feedback and sales data.

“Additionally, since COVID-19 is a global issue, and demand for botanicals are already growing in those source countries, it is expected that the overall demand will outweigh the supply,” Patel added, “and as a result it will not only become difficult to source certain botanicals, but in addition, the prices will escalate.”

BI Nutraceuticals in Rancho Dominguez, California, which is now part of the Martin Bauer Group North America, obtains raw materials from 45 different countries, according to Rupa Das, vice president of global quality and compliance for the company (oral communication, March 17, 2020). “Certain herbs grow only in certain regions, so because we are dependent on the world for supply, we will be very much affected,” she said.

Wilson Lau, vice president of Nuherbs, a San Leandro, California-based importer of Chinese herbal formulas, described the situation as “very fluid” (oral communication, March 17, 2020). “What we know is that pain is coming,” he said.

Unprecedented Demand

According to sources, herbal industry companies need to address three primary issues related to the crisis: disruptions to the supply chain, changes in domestic production, and the spike in demand for herbal products, all while keeping their workers safe and maintaining productivity.

As the ripple effects of the coronavirus continue to affect the global economy, consumers have been stockpiling non-perishable food items, soaps, and health products, including herbal dietary supplements. “Currently, many consumers are purchasing supplements to fortify their immune systems against infection, as there is no vaccine or [proven] treatment [for the coronavirus],” said Guy Woodman, general manager of Euromed S.A., a producer of standardized herbal extracts based in Barcelona, Spain (email, March 23, 2020).

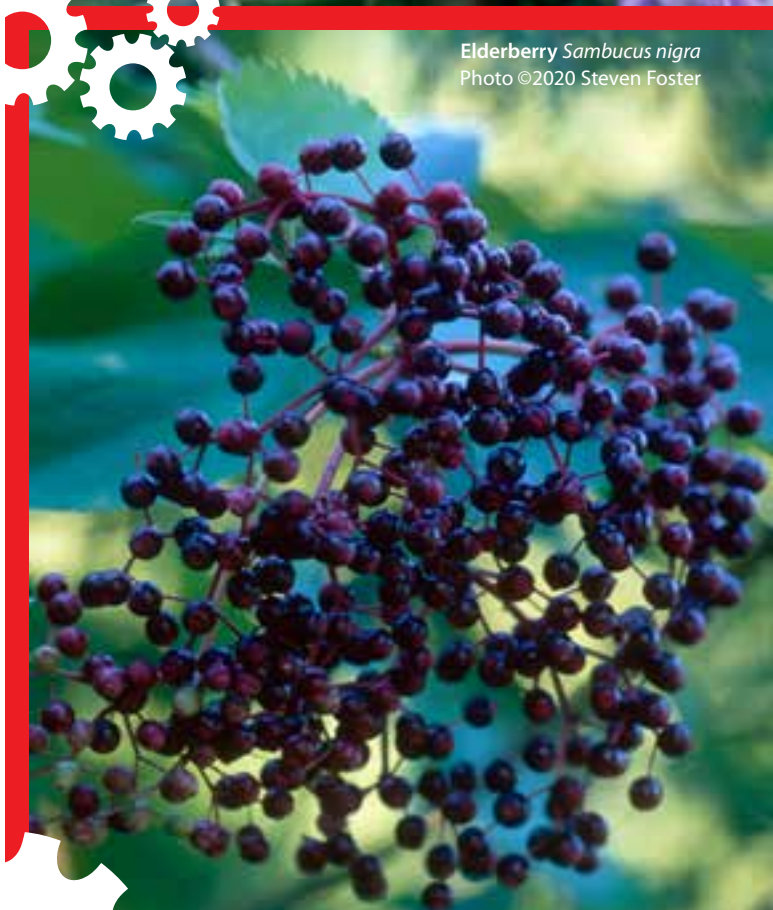
Early on, Beth Lambert, CEO of Herbalist & Alchemist, a Washington, New Jersey-based manufacturer of herbal extracts and formulas, took proactive measures to deal with the emerging virus. “When we first started hearing about the coronavirus in China, we ordered all the Chinese herbs we thought we would need for the year,” she explained (email, March 30, 2020). “Everything changed when it became apparent that the US and Canada would be facing similar epidemics; we saw an abrupt increase in orders, driven primarily by our practitioner customers.”

Woodman noted a spike in demand for herbal extracts typically used in immune-enhancing supplements, including extracts of echinacea, olive (*Olea europaea*, Oleaceae) leaf, and rosemary (*Rosmarinus officinalis*, Lamiaceae). “Euromed has experienced increased demand for these extracts in response to brisk sales of our customers’ immune health formulations,” Woodman said.

Verdure’s Patel agreed, noting increasing demand for immune-building herbs and botanicals, as well as adaptogens and antioxidant-containing herbs, for which he expects to see more demand. These include botanical ingredients like turmeric, ashwagandha (*Withania somnifera*, Solanaceae)



Rosemary *Rosmarinus officinalis*
Photo ©2020 Steven Foster



Elderberry *Sambucus nigra*
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root, tinospora (*Tinospora cordifolia*, Menispermaceae) stem, holy basil (*Ocimum tenuiflorum*, Lamiaceae) leaf, ginger (*Zingiber officinale*, Zingiberaceae) root and rhizome, boswellia (*Boswellia serrata*, Burseraceae) gum, shatavari (*Asparagus racemosus*, Asparagaceae) root, and andrographis (*Andrographis paniculata*, Acanthaceae) leaf, to name a few, he said. “Many of our customers are seeking additional supportive information to target immune health and support,” Patel added.

A number of these herbs are already in high demand in the United States. According to data from *HerbalGram’s* 2018 Herb Market Report, herbal supplements marketed for immune-health benefits experienced some of the greatest sales growth (by percentage) from the previous year in both mainstream and natural retail channels.² The recent increases may be especially problematic for herbs that are already in high demand. This includes herbs like echinacea, a well-studied immunomodulator,^{3,4} which saw more than \$120 million in sales in 2018 and double-digit growth from 2017 in both channels; turmeric, for which in vitro antiviral properties have been reported,⁵ which saw a combined \$144.5 million in sales in both channels and growth of 30.5% from 2017 in the mainstream channel; and elderberry, increasingly recognized for its immune-support benefits,^{6,7} with combined sales of \$76 million in 2018 in both channels and growth of 138% in the mainstream retail channel and 94% in the natural channel.

Natural products industry publications and market research firms, such as *Nutrition Business Journal (NBJ)* and SPINS, reported unprecedented spikes in sales from late February through March 2020 for cold and flu formulas and immune-support products, including herbal formulas and single-herb products.⁸ According to data from Amazon.com compiled by *NBJ* and presented in an April 2, 2020, webinar, more than half of surveyed Amazon customers said they increased their use of supplements during the previous week. Kathryn Peters, executive vice president of SPINS also reported in the webinar that immune-health products overall had seen sales increases in March and herbal formulas and single-herb products specifically doubled in unit sales per store across the month. While elderberry products showed one of the most significant spikes in the cold and flu category, Peters also noted an increase, although not as large, in immune-support formulas and predicted that there will likely be continued growth for products besides those related specifically to immunity and respiratory health.

Chinese herbal formulas also are seeing increasing interest. According to Subhuti Dharmananda, PhD, founder and director of the Institute for Traditional Medicine in Portland, Oregon, “general panic has set in among practitioners of Chinese medicine, and they are trying to buy

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up anything that is supposed to enhance immune functions or treat [viral infections]. Everyone is running out of those, and it takes time to resupply, not because of disrupted supply chains, but getting things from China normally takes some time, including delays by regulators at the ports” (email, March 20, 2020).

The demand for Chinese herbs is escalating as news reports from China have featured current treatment standards for COVID-19 from the central government of China that include herbs used in traditional Chinese medicine (TCM), with a breakdown of specific formulas used for

different stages of disease.⁹ One recent literature review, published in English in the *Chinese Journal of Integrative Medicine*, concluded that while more rigorous population studies are needed, Chinese herbal formulas could be an alternative approach for prevention of COVID-19 in high-risk populations.¹⁰

“Our business is up, as it is in most of the supplement industry,” Lau noted, “and that includes orders from TCM practitioner customers. Most of the herbs that have been highlighted as being effective for COVID-19 patients *in* China are also *from* China,” (email, March 27, 2020). While access to these herbs isn’t really an issue, since the supply chain is flowing from China again, he said, “the prices may increase, largely because of shipping costs, with sea cargo space less available and in high demand, but for the most part the supply is accessible.”

Lau noted that the increased interest is not surprising because well-trained clinical herbalists and TCM physicians reportedly are treating various serious health conditions successfully with Chinese herbs. “Some hospitals in China, such as Beijing Hospital of Traditional Chinese Medicine, are effectively treating coronavirus using TCM integrated with conventional medicine,” he said. But, he added, it is important to keep in mind that those patients are being monitored by medical staff.

Many of the formulas noted in Chinese literature have been based on the *wen bing* (“warm disease”) theory in Chinese medicine, according to an article by Eric Brand, PhD, LAc, a Chinese medicine practitioner, who has been following the impact of the coronavirus on the herbal supply chain for his company *Legendary Herbs* in Boulder, Colorado, a company which specializes in Chinese herbs. This theory has prompted a high demand for “heat clearing” herbs in China’s top-tier hospitals and shortages of, for example, *ban lan gen*, the root of a flowering plant called woad (*Isatis tinctoria*, Brassicaceae); *jin yin hua*, the flower of Japanese honeysuckle (*Lonicera japonica*, Caprifoliaceae); and *huang qin*, the root of skullcap (*Scutellaria baicalensis*, Lamiaceae).

While numerous traditional Chinese herbs are considered anti-pathogenic, Dharmnanda cautioned that “there is not specific information pointing to any of them as being effective for COVID-19.” The well-known formula *Yin Qiao San*, which includes *jin yin hua* and *lian qiao* (the fruit of forsythia [*Forsythia suspensa*, Oleaceae]), is used traditionally to treat infections. “This has sold out promptly,” he said.

The rush for these herbs has pushed companies to address shortages as best they can. “Demand for herbal supplements, immune-support herbs in particular, escalated rapidly for most of our customers, who are now reordering from us in high volume,” Lau said. “Every manufacturer we have talked to is a week or more behind their usual schedule in filling orders, just as we are. Our customers are not just herbal product manufacturers. We also supply TCM practitioners with teapills, classical formulas, and other items they use in their practices, and their orders are far larger than usual as well. Everyone is trying their best at a difficult time.”

While the business growth is encouraging, Euromed’s Woodman thinks that the overall spike may be short-lived. “Over time, the economic impact associated with loss of employment will reduce discretionary purchases of herbal dietary supplements,” he said.

Supply Chain Concerns

Predicting how the crisis will impact the supply chain over the long-term may be more difficult. Herbal supply issues are complex and precede the pandemic. Historically, the natural products industry, in general, depends on China for up to 80% of its ingredient supply, noted Loren Israelsen, executive director of the United Natural Products Alliance (UNPA), in a recent webinar on the supply chain crisis.¹¹ Heavy reliance on China has been an increasingly critical issue for herbal companies because of the trade war between China and the United States that began in 2018.¹²

The situation for supplement manufacturers has become more daunting because of trade tariffs, according to Nuherbs’ Lau. In a mid-March 2020 statement, Lau wrote that tariffs on dried herbs were still at 25%, and other ingredients such as herbal extracts were being tariffed at 15% and then rolled back to 7.5%.¹³

The tariff issue caused uncertainty and difficulty for many companies, but also prompted some firms to monitor the China situation early on. “We have been watching COVID-19 developments closely since early January,” Lau said. “We’re China experts who have been doing this for decades, so before the Chinese New Year holiday [on January 25, 2020] we had a large amount of stock arrive at our northern California warehouse, and the rest of the 2019 harvest we purchased from our farmers was processed to our specifications and ready to ship as needed.”

Forsythia Forsythia suspensa
Photo ©2020 Steven Foster





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Suppliers that acted early experienced few shortages in mid-March, as the crisis began to escalate globally. Verdure, with its global affiliations and network, especially in Asia, has been following the COVID-19 outbreak since January, Patel said. “Since then, we have been extremely proactive with our supply chain partners and expedited bringing in additional inventory to carry us forward several months, in the event the situation escalated in other parts of the world. Sure enough, in addition to Europe and the United States becoming the next epicenters after China, prompting various shutdowns, India went into a total shutdown ... with no movement of persons or commercial goods, including a shutdown of airports and ports, paralyzing logistics.”

Indena USA also ordered additional materials for key products in advance of the pandemic, “just in case,” said Greg Ris, vice president of sales for the Milan-based supplier (email, March 18, 2020). As northern Italy became a hotspot, he noted that some shipments from Milan were delayed but not alarmingly so, although the US Food and Drug Administration (FDA) was taking extra time to clear the materials at the ports of entry.

BI Nutraceuticals/Martin Bauer also was prepared for early supply issues, according to Das, who said the company had no initial shortages and was well stocked for customers’ immediate requirements. That said, she added that the company is looking at other source locations for herbs with the same medicinal effects from Europe or India, in anticipation of future shortages.

By late March, however, depleted inventories were becoming more common. “From what I hear, most manufacturers are experiencing out-of-stocks, just like we are,” said Herbalist & Alchemist’s Lambert. “It’s a combination of supply chain disruption and rapidly increased demand. But so far our suppliers have been responding to our orders.” In a statement on its website, the company noted temporary out-of-stocks for many immune-support products, with the company focusing on replenishing products it believes are most essential, including immune-, kidney- and cardio-support products as well as the “Lung Relief™ Hot/Dry” formula, nervines, and adaptogens.¹⁴

Logistical Complications

Suppliers also face the evolving challenges of altered logistics. China, where the economy is currently emerging from lockdown, is a good case study of how this might play out. Factories are resuming production, but progress toward getting back to normal is slow. “Factories are reopening,” Das said, “but because of restricted movement of the public, they can’t reach the factories, so it has been difficult to get them back up to speed. They also need to be sanitized.”

Transportation of goods is another obstacle. “Because everyone has a backlog, things are congested,” Das added. “Road transportation and boats are overwhelmed, and ports are closed or ships are not stopping at specific ports.” Outgo-

ing raw materials must also be inspected, she noted, so there are administrative delays and significant congestion. “There is raw material in China, but to get it here [into the United States] is a huge deal.”

Lau echoed similar concerns. These are not normal times, he said. “Shipping is still disrupted from China, being essentially

shut down for weeks. Air freight shipment is faster than cargo but because of the expense, approximately 10-15 cents per kilo for container sea freight versus \$4 to \$9 per kilo for air shipment, it’s a short-term solution. It is made worse by the tariffs.”

Another factor for herbal companies is the backlog of goods from many industries that must rely on the limited number of cargo ships, Israelsen noted in the webinar. And a hierarchy determines how this will go, he explained, noting that China’s domestic consumption comes first, followed by high-value cargo such as information technology and automobile materials. Natural products ingredients will be fairly low in the queue.¹¹ UNPA estimated that the supply of a significant number of China-sourced supplement ingredients would be critical by late April and that disruptions could continue through mid-year.

The changes have now expanded well beyond China, with lockdowns in countries around the world from India and Malaysia to Colombia and Argentina.¹ Delivery logistics for suppliers from Europe have currently become the most challenging issue for Herbalist & Alchemist, Lambert said.

These quarantines and lockdowns have triggered confusion about what industries are considered essential and will be allowed to remain open and in operation. For example, in Malaysia, many dietary supplement companies were confused about whether they were allowed to operate after the government’s Movement Control Order on March 18 that left them wondering how they would keep up with product supply as pharmacies remained open and online purchasing continued.¹⁵

Adulteration Concerns

If the availability of raw materials continues to decline along with the ability of companies to manufacture products, it could also amplify an already-significant industry concern about adulterated ingredients and products. Verdure’s Patel said he is concerned about the potential of companies taking advantage of shortages over the short-term to make quick financial gains. Especially since a majority of raw materials come from China and India, “it is very likely that brand owners are having to scramble for raw materials to keep their pipeline filled, and, as a result, are diverting to suppliers that may not be qualified or trusted,” Patel said.

Lau explained that the situation will require due diligence from ingredient suppliers and manufacturers. “Any time there is a shortage of material, or prices go up, or buyers go outside their usual supplier network,” Lau said,

Japanese honeysuckle *Lonicera japonica*
Photo ©2020 Steven Foster





“manufacturers have to be far more suspicious of material they are buying. The only solution is robust testing for identity, potency, and purity using reputable labs.”

Elan Sudberg, CEO of Alchemist Labs, agreed that adulteration is a concern right now as companies are dealing with the combined challenges of a strained supply chain due to the trade war, COVID-19 disruptions, and increased demand (email, April 7, 2020). “Then, we have the FDA’s temporary halt to inspections during this health crisis, and that’s a perfect storm for adulteration,” he said. “Robust testing is the only insurance that the products [contain] what the labels say they [contain].”

These concerns were echoed by Mark Blumenthal, founder and executive director of the American Botanical Council and founder and director of the ABC-AHP-NCNPR Botanical Adulterants Prevention Program (BAPP): “In more than 45 years in the botanical industry, I have seen cases in which supply shortages of specific botanicals led to an increase in adulterated material in the US and global markets.” He added that BAPP’s website includes 57 peer-reviewed documents that provide industry members and analytical labs with guidance to avoid adulterated raw materials, extracts, and essential oils.

Some companies won’t allow the crisis to change their values. “Herbalist & Alchemist is very fortunate to have such close and longstanding relationships with our ingredient suppliers, farmers, and wildcrafters,” Lambert said. “And we contacted all labs we work with to discuss their availability and backup plans. We will not change any of our identity specifications or procedures. We would rather be out of a product than compromise quality. Our customers need to know they will receive products with the same consistent quality.”

Safety on the Home Front

As the spread of the pandemic prompted lockdowns and shelter-in-place orders across the world, herbal companies began dealing with the challenges presented by these new protocols while also addressing the safety of their employees. Dietary supplement industry associations in the United States immediately began making statements to clarify the importance of member companies during these work stoppages. A statement from the American Herbal Products Association (AHPA), for example, cited that dietary supplement and herbal product companies are tied to the food and agriculture categories, making them essential businesses that support grocery stores, pharmacies, and other retailers that sell food and beverage products.¹⁶ AHPA further noted that this designation is implied by several regulatory agencies and explicit in California.

Some industry associations and companies sought further clarity to be sure that manufacturers and retailers in the category would not be closed by government direc-

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tives.¹⁷ For example, the Natural Products Association (NPA), in a letter to the White House, requested that the administration take action to ensure that these types of businesses remain open and that access to essential dietary supplement products continues.¹⁸ As of April 3, 2020, Nevada, one of the states specifically petitioned in this effort, has included health food stores among the businesses that would be closed.¹⁹

People are now working from home, schools are closed, and parents are staying home with their kids. “This will have a big impact on productivity,” Das said. “Our first concern is the personal safety of our employees and second is supply chain safety.” She noted that the team has contingency calls everyday to address ongoing supply chain issues and people who can work remotely are doing so. “We had time to plan and for now we have backup, so if one person is out sick or needs to be with a family member, we have other ways of taking care of the work.”

Because Nuherbs supplies products to multiple channels including health care, it has been exempted from work stoppages and shelter-at-home orders that began early in the San Francisco Bay Area. Lau didn’t rule out the possibility of a future closure and noted that the company is taking precautions to ensure the safety of its employees. “Our employees’ wellbeing is our top priority,” he said. “We are, of course, adhering to CDC [US Centers for Disease Control and Prevention] guidelines..., and our warehouse is large, giving people distance from each other. Our staff that has to take public transportation has been given time off, so that they don’t have to be exposed while traveling to work.”

Some people also are concerned about how long the virus can last inside production facilities. “One of the first questions our QC manager wanted answered was how long can it remain on different surfaces,” noted Lambert. “We needed to assure ourselves we could [adopt] safe procedures based on science.” On March 17, *The New England Journal of Medicine* reported that while the virus can be detected on some surfaces for up to a day, the levels tend to drop off quickly.²⁰ “The virus’s half-life (how long it takes the viral concentration to decrease by half) on stainless steel was 5.6 hours and plastic 6.8 hours.... So, we added work instructions such as to either not touch incoming packages for 72 hours and/or wear gloves when unpacking or immediately wash hands after handling. We discussed cleaning procedures with UPS and had frank discussions with delivery people and dispatch personnel.”

These scenarios are playing out in companies around the world. “My colleagues in Milan are managing the best that they can under these lockdown conditions,” Ris said. “Many are working from home and thus far production has been operating on regular hours.”

Similarly, at Euromed, “Staff that do not need to be onsite are working from their residences,” Woodman said. “Customer communications are being performed

by conference call rather than in-person meetings. Non-essential employee travel has been prohibited.” In addition, Euromed’s extraction facilities in Spain are working split shifts to segregate personnel with facility sterilization between shifts. “Our laboratory staff are following a similar protocol,” Woodman added. “We have alternative sources of raw material in the event of a supply chain disruption.”

The Long View

Looking further ahead, however, the consequences for companies and their supply chains are more difficult to predict. In the supply chain webinar, Israelsen predicted that the pandemic will force companies to ultimately better understand their supply chain’s weaknesses and diversify their ingredient sources.

Many companies agree. “I do anticipate it will change where we source,” said Das. “Now, some products you can get from only China, but after this, there will be a shift from being totally dependent on China. Europe has a lot to offer. So, we are developing strategies on how to deal with this.”

But the changes companies make must be considered carefully, Patel noted, which is a topic the Verdure team has been debating internally. It is particularly critical, he said, for an industry dealing with “botanicals and nature where the traditional source countries/regions have a very important role to play from a standpoint of soil and growing conditions, traditional knowledge of growing, harvesting, and processing, [and] sustainability and consistency of output ... to name a few. In addition to all of this, one needs to ensure that the economies of scale are managed.”

Moving away from China to source in other countries may also create additional challenges such as maintaining compliance with the FDA Food Safety Modernization Act’s Foreign Supplier Verification Program and ensuring that new sourcing partners are the original supplier and not supplying sub-components from other entities.¹¹

Beyond changes to daily life, Patel said, the pandemic underscores that the botanical and dietary supplement industries will have an even greater need in the future for risk mitigation and contingencies in their supply chains, inventory management, business continuity planning, and sustainability. But Patel also sees potential opportunities as the world recovers from the crisis. While things may be different, he said, “this is a great opportunity for the dietary supplement industry in which the acceptance of and demand for many botanicals and herbal preparations is expected to grow as

consumers divert more toward natural alternatives that have been proven in traditional medicine to support immune systems and keep people healthy long-term using a more proactive approach.”

Das sees the potential to learn from past mistakes. “My fear is that after all of this, it [goes] back to the same old same old, where we are faced again with the need to clamp down and find alternatives in a crisis.” She noted that this is an opportunity for the industry to put competition aside, work together to develop studies on alternative ingredients that might be cost-prohibitive for a single company, and have experts within the industry dedicated to this rather than every company doing their own thing. “Every company should not have to reinvent the wheel,” she said.

While the effects of the pandemic may be disruptive to the industry for a long time, Lambert was also optimistic overall, noting that the close relationships many people within the herb industry have will help all get through the resulting challenges. “There is this shared passion for and



Holy basil *Ocimum tenuiflorum*
Photo ©2020 Steven Foster



“There is this shared passion for and commitment to the benefits provided by what we all do, and we will continue to help each other deliver those. Some of our suppliers are concerned about the impact on the growers and wildcrafters. Their health through this crisis might be the most important factor in the long-term health of herbal supplies.”

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For now, even with the challenges, some are taking comfort in the small things. “I am hopeful,” Lambert added. “This morning I received confirmation of shipment from one of our European suppliers with the note, ‘feeling lucky for ourselves and our kids to live in the countryside rather than being locked up inside. At least they can play in the garden.’” And that is a hopeful thing for herbalists everywhere. HG

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