Ginkgo *Ginkgo biloba*
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US Sales of Herbal Supplements Increase by 9.7% in 2021

Near-record retail sales growth continues to be driven largely by pandemic-related wellness concerns, including immune and digestive health, mood support, and energy

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Introduction

In 2021, retail sales of herbal dietary supplements in the United States totaled an estimated $12.350 billion, according to data from the *Nutrition Business Journal* (NBJ). This represents a 9.7% increase in total sales compared to the previous year — the second-strongest annual sales growth for these products behind 2020's record-breaking 17.3% increase from 2019.

Consumer spending on herbal supplements grew by a total of $1.089 billion in 2021, marking the second consecutive (and only other) year in which US sales have grown by more than $1 billion annually. Combined with the $1.659 billion increase in sales in 2020, this is more than the total annal sales increases for the four-year period before COVID-19 began spreading in the United States, from 2016 to 2019 (Table 1).

Sales in 2020 were driven largely by sharp spending increases on products marketed for immune support and other pandemic-related health considerations. In 2021, this trend continued, with notable sales increases for products in categories such as digestive health, mood support, energy, and sleep.

SPINS, a market research firm based in Chicago, Illinois, and NBJ, a natural products industry publication of Informa's New Hope Network based in Boulder, Colorado, provided the US retail sales figures for this report. NBJ supplied estimates of the total annual sales of herbal supplements, as well as sales in three market channels (mass market; natural, health food, and specialty; and direct sales) and sales by product type (single-herb supplements vs. combination formulas). SPINS provided sales data for the 40 top-selling herbal and fungal ingredients in the mainstream (conventional) and natural retail channels. Channel definitions are included in Table 2.

Sales in each of NBJ's market channels (Table 3) have increased each year since 2009, and this was also the case in 2021. Direct sales of herbal supplements, which include online sales, experienced the strongest growth of 15.8% in 2021, reaching a total of $7.152 billion. Sales growth was significantly less pronounced in NBJ's mass market and "natural, health food, and specialty" channels. Natural channel sales totaled $2.992 billion in 2021 — a 1.4% increase from the previous year. According to NBJ, the modest growth in this channel was due in part to significant sales declines in specialty supplement retail stores (e.g., GNC and The Vitamin Shoppe). Herbal supplement sales in the mass market channel increased by 3.5% in 2021 to a total of $2.205 billion. This is significantly less than the 25.1% growth in this channel in 2020.

The SPINS data for the ingredients discussed in this report include sales of dietary supplements in which the herbal or fungal ingredient (or derivative thereof, such as quercetin, plant sterols, etc.) is the primary functional ingredient. This includes only products that meet the legal definition of a dietary supplement per the US Food and Drug Administration (FDA), except for cannabidiol (CBD) products, as explained later. Sales of herbal teas or cosmetics with botanical ingredients are not included. The dollar amounts are estimates of the total sales during the 52-week period that ended December 26, 2021.

Unless otherwise noted, subsequent descriptions of sales increases and decreases, or sales growth and decline, refer to total annual sales changes *by percentage* from the previous year. The mainstream and natural channel sales discussed in this report refer to retail sales in the United States only.

MAINSTREAM CHANNEL

Elder Berry

Elder berry (*Sambucus* spp., Viburnaceae) was the top-selling herbal supplement in mainstream retail outlets in 2021 for the second year in a row. Mainstream sales of elder berry supplements decreased by 0.2% but remained strong in 2021, totaling $273,700,867 — a decrease of less than $2 million from 2020. This is the first mainstream sales decrease for elder berry since 2012.

Despite this slight decline, 2021 sales were still significantly higher than pre-pandemic sales of this herbal ingredient, which has been widely touted for its potential immune health benefits. Consumers spent 154.4% more on elder berry supplements in 2021 than in 2019. Even before the pandemic, elder berry sales experienced triple-digit growth in 2018 and 2019, which continued in 2020, when sales increased by more than 150% from the previous year.

Often written as a single word, "elderberry" in commerce can refer to the fruit of the plant or the plant itself. Elder berry products typically contain preparations (e.g., juices or extracts) of the dark purple fruit of *Sambucus nigra*, also known as European elder or black elder. Although other elder species, such as American elder (*S. canadensis*), and plant parts (e.g., flowers) have been used medicinally, these formulations are less common in the US market.[1]

European elder has been used as a medicine since ancient times and appeared in various writings of influen-

Elder berry *Sambucus nigra*
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MARKET REPORT

Table 1. Total US Retail Sales of Herbal Supplements*

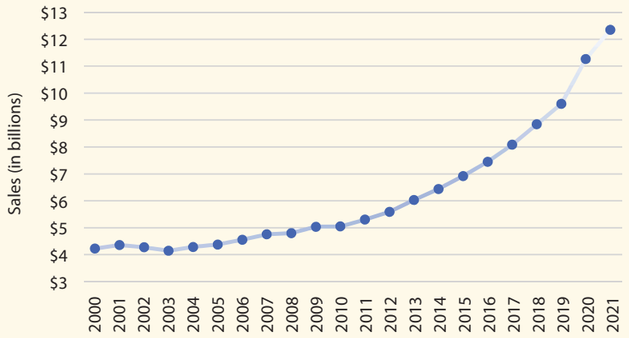
Year	Total Sales	% Change
2021	$12.350 billion	9.7%
2020	$11.261 billion	17.3%
2019	$9.602 billion	8.6%
2018	$8.842 billion	9.4%
2017	$8.085 billion	8.5%
2016	$7.452 billion	7.7%
2015	$6.922 billion	7.5%
2014	$6.441 billion	6.8%
2013	$6.033 billion	7.9%
2012	$5.593 billion	5.5%
2011	$5.302 billion	4.5%
2010	$5.049 billion	3.3%
2009	$5.037 billion	5.0%
2008	$4.800 billion	1.0%
2007	$4.756 billion	4.4%
2006	$4.558 billion	4.1%
2005	$4.378 billion	2.1%
2004	$4.288 billion	3.4%
2003	$4.146 billion	–2.3%
2002	$4.275 billion	–2.8%
2001	$4.361 billion	3.2%
2000	$4.225 billion	2.9%

Source: *Nutrition Business Journal*

* Includes sales in all channels. NBJ primary research includes NBJ surveys of supplement manufacturers, distributors, MLM firms, mail order, internet, and raw material and ingredient supply companies, as well as interviews with major retailers (Walmart, Costco, etc.), manufacturers, suppliers, and industry experts. Secondary sources include IRI, SPINSScan Natural, Nielsen, *Natural Foods Merchandiser*, Insight, The Hartman Group, company data, and other published material.

Elder berry *Sambucus nigra*
Photo ©2022 Steven Foster Group

Figure 1. Total US Retail Sales of Herbal Supplements



Source: *Nutrition Business Journal*

tial Greek and Roman physicians and naturalists, including Hippocrates (ca. 460–370 BCE), Pliny the Elder (ca. 23–79 CE), and Pedanius Dioscorides (ca. 40–90 CE). Historically, elder berry preparations have been used to treat a range of conditions, such as respiratory and digestive ailments, smallpox, inflammation, toothache, and burns, and to induce perspiration and increase resistance to illness. Modern uses of elder berry typically are associated with immune support and respiratory conditions.[1]

Elder berry contains anthocyanins, flavonols, and phenolic acids and has been shown in laboratory and animal studies to have antioxidant, anti-inflammatory, antiviral, antimicrobial, and immune-stimulating effects. These promising in vivo and in vitro results have led researchers to investigate the effects of elder berry preparations on the prevention and treatment of colds and influenza in human clinical trials.[2] As of August 2022, PubMed, the National Library of Medicine's biomedical research database, included more than 400 pre-clinical and human studies on elder berry. Research on this popular herbal ingredient appears to be increasing, with approximately 50 to 80 new studies having been published each year since 2012.[3]

Several human clinical trials on the use of elder berry preparations for colds and flu have reported positive findings,[2] and at least two recent reviews have summarized clinical evidence supporting elder berry's use for these and related conditions. Published in April 2021, a systematic review of elder berry for the prevention and treatment of viral respiratory illnesses found that it reduced the severity and duration of colds and the duration of flu. The authors noted that elder berry "may be a safe option for treating viral respiratory illness" but cautioned that much of the reviewed evidence was of low quality.[4] Results of other elder berry meta-analyses, such as one published in 2019, suggest that it may be able to reduce upper respiratory symptoms.[5]

Consumers' continued focus on immune support during the second year of the pandemic helped maintain strong mainstream sales of elder berry supplements in 2021. In its annual Consumer Survey on Dietary Supplements, the Council for Responsible Nutrition (CRN), an industry trade group, reported that immune health was the second most common reason users took supplements in 2021 (after "overall health and wellness").[6]

The large and growing body of research on elder berry's medicinal uses may have added to the herb's appeal. In 2021, increasingly savvy mainstream consumers reportedly cited scientific research as one of the top considerations when purchasing a supplement for immune health, as discussed later.[7,8]

Elder berry sales have likely benefited from the fruit's pleasant, familiar taste as well. The sweet berry flavor has allowed for the proliferation of easy-to-consume formula-

Table 2. US Retail Channel Definitions*

	SPINS	*Nutrition Business Journal*
Mainstream Retail Channels	**Multi-Outlet Channel (powered by IRI)** Covers grocery outlets (stores with $2 million+ total annual sales), drug outlets (chains and independent stores, excluding prescription sales), and selected retailers across mass merchandisers, including Walmart, club, dollar, and military stores representing more than 105,000 retail locations.	**Mass Market Channel** Includes food/grocery, drug, mass merchandise, and club and convenience stores (e.g., Walmart, Costco, etc.).
Natural Retail Channels	**Natural Enhanced Channel** Includes full-format stores with $2 million+ in annual sales and 40% or more of UPC-coded sales from natural/organic/specialty products. It includes co-ops, associations, independents, and large regional chains (excluding Whole Foods Market & Trader Joe's). This channel represents more than $28 billion in total sales and encompasses more than 1,850 stores.	**Natural, Health Food, and Specialty Channel** Includes supplement and specialty retail outlets, including Whole Foods Market (estimates), GNC, sports nutrition stores, etc.
Direct Sales Channel		Includes direct-to-consumer sales from the internet (e.g., e-commerce websites such as Amazon.com and Walmart.com, among many others), direct-selling media (TV, radio, and print publications), health practitioners, and multilevel marketing (MLM) or network marketing firms (US sales only).

* The sales discussed in this article pertain only to those involving herbal or fungal dietary supplements. They generally do not include herbs sold as teas and beverages or as ingredients in natural personal care and cosmetic products, including so-called "cosmeceutical" products.

Table 3. Total Herbal Supplement Sales in US by Channel						
	2017	2018	2019	2020	2021	% Growth from 2020
Mass Market	$1.449 billion	$1.558 billion	$1.704 billion	$2.131 billion	$2.205 billion	3.5%
Natural, Health Food, and Specialty	$2.624 billion	$2.804 billion	$2.904 billion	$2.950 billion	$2.992 billion	1.4%
Direct Sales	$4.012 billion	$4.480 billion	$4.995 billion	$6.179 billion	$7.152 billion	15.8%

Source: *Nutrition Business Journal*

Ashwagandha *Withania somnifera*
Photo ©2022 Steven Foster Group

tion types, including gummies, syrups, and lozenges.[9] This may have helped ease the "pill fatigue" reported by consumers even before the pandemic began.[10] In 2021, industry experts also began seeing signs of "immune fatigue" among supplement users. This has led some companies and marketers to reconsider their approach to the immune health category. Incorporating popular immune ingredients such as elder berry into multicomponent formulas with separate health benefits (e.g., sleep aids, digestive support products) is one such approach that was increasingly common in 2021. Emerging research on other potential benefits of elder berry phytochemicals, such as the effects of polyphenols on the gut microbiome,[11] has helped guide the formulation of some of these products.[12]

The increased demand for elder berry supplements since the beginning of the pandemic has led to concerns about potential adulteration of these products. This publication and others have recently documented the adulteration of elder berry products with other lower-cost, unlabeled ingredients. Unlike some botanical crops that can be grown and harvested in a short period of time to address spikes in demand, elder berry comes from trees that require at least three or four years of growth before harvest is possible.[13,14]

Ashwagandha

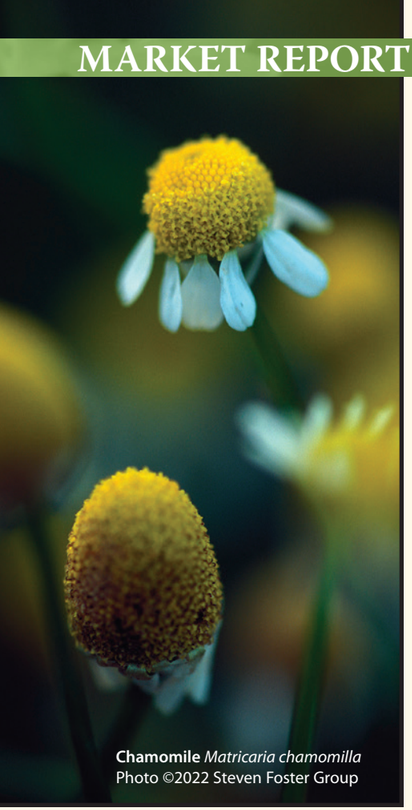
Ashwagandha (*Withania somnifera*, Solanaceae) experienced the strongest mainstream sales growth in 2021 for the second consecutive year. Consumers spent 225.9% more on ashwagandha supplements in 2021 compared to the previous year, with sales totaling $92,326,926 — an increase of nearly $64 million from 2020. This herb first appeared among the 40 top-selling ingredients in the mainstream channel in 2018 with sales of less than $7.5 million. Since then, annual sales have increased by more than 1,100%, moving ashwagandha from the 34th top-selling supplement in this channel in 2018 to the seventh in 2021. Mainstream sales of ashwagandha have more than doubled each year since it first appeared on the top-40 list, except for 2019 when sales grew by roughly 45%.

The herb is considered an adaptogen, a term that describes a substance that improves the body's ability to adapt to stress. Ashwagandha has been used for millen-

Table 4. Top-Selling Herbal Supplements in 2021 — US Mainstream Multi-Outlet Channel				
Rank	Primary Ingredient	Latin Binomial	Total Sales	% Change from 2020
1	Elder berry	*Sambucus nigra* and *S. canadensis*	$273,700,867	–0.2%
2	Psyllium	*Plantago ovata*	$246,875,176	0.0%
3	Apple cider vinegar	*Malus* spp.	$178,382,955	128.6%
4	Horehound[a]	*Marrubium vulgare*	$138,140,940	0.2%
5	Turmeric[b]	*Curcuma longa*	$111,658,256	15.0%
6	Cranberry	*Vaccinium macrocarpon*	$107,880,602	5.6%
7	Ashwagandha	*Withania somnifera*	$92,326,926	225.9%
8	Ivy leaf	*Hedera helix*	$49,864,810	46.8%
9	Ginger	*Zingiber officinale*	$46,786,074	13.5%
10	Fenugreek	*Trigonella foenum–graecum*	$45,639,589	39.5%
11	Echinacea[c]	*Echinacea* spp.	$41,197,214	–24.3%
12	Garlic	*Allium sativum*	$33,869,966	–4.0%
13	St. John's wort	*Hypericum perforatum*	$32,769,413	10.7%
14	Wheatgrass / barley grass	*Triticum aestivum / Hordeum vulgare*	$30,648,079	–7.5%
15	Beta-sitosterol[d]	—	$30,186,557	21.3%
16	Valerian	*Valeriana officinalis*	$30,151,601	–7.3%
17	Ginkgo	*Ginkgo biloba*	$29,175,299	8.5%
18	Saw palmetto	*Serenoa repens*	$26,275,082	1.8%
19	Flax seed or oil	*Linum usitatissimum*	$24,440,895	0.7%
20	Black cohosh	*Actaea racemosa*	$23,785,494	–3.8%
21	Pycnogenol®[e]	*Pinus pinaster* ssp. *atlantica*	$22,896,976	–13.6%
22	Pumpkin	*Cucurbita pepo*	$19,655,605	2.6%
23	Cannabidiol (CBD)	*Cannabis sativa*	$19,361,338	–31.6%
24	Goji berry	*Lycium* spp.	$19,202,538	16.6%
25	Milk thistle	*Silybum marianum*	$18,951,435	4.5%
26	Beet root	*Beta vulgaris*	$18,355,599	31.1%
27	Aloe	*Aloe vera*	$18,073,831	–12.5%
28	Yohimbe	*Pausinystalia johimbe*	$18,017,433	0.7%
29	Maca	*Lepidium meyenii*	$16,948,336	62.9%
30	Horny goat weed	*Epimedium* spp.	$16,336,196	12.0%
31	Bioflavonoid complex[f]	—	$15,556,203	9.7%
32	Red yeast rice[g]	*Oryza sativa*	$13,629,507	–1.3%
33	Green coffee extract	*Coffea arabica*	$13,118,262	5.0%
34	Senna[h]	*Senna alexandrina*	$12,528,828	12.0%
35	Plant sterols[i]	—	$12,138,990	5.4%
36	Cinnamon	*Cinnamomum* spp.	$12,112,385	–14.3%
37	Fennel	*Foeniculum vulgare*	$11,819,484	16.9%
38	Chamomile	*Matricaria chamomilla* syn. *M. recutita*	$11,102,798	4.3%
39	Rhubarb	*Rheum rhabarbarum*	$10,717,337	34.7%
40	Açaí	*Euterpe oleracea*	$10,302,622	4.7%

Source: SPINS (52 weeks ending December 26, 2021)

[a] Commonly found in throat lozenges.
[b] Includes standardized turmeric extracts with high levels of curcumin.
[c] Includes three *Echinacea* species: *E. angustifolia*, *E. pallida*, and *E. purpurea*.
[d] Beta-sitosterol is a common plant sterol that can be derived from various plants.
[e] Pycnogenol (Horphag Research; Geneva, Switzerland) is a branded extract of French maritime pine (*Pinus pinaster* ssp. *atlantica*) bark.
[f] Bioflavonoids are phytochemicals that often are extracted from citrus (*Citrus* spp., Rutaceae) fruits.
[g] Red yeast rice is fermented with the yeast *Monascus purpureus*.
[h] Excludes OTC laxative drugs containing senna or sennosides.
[i] Not including beta-sitosterol.



Chamomile *Matricaria chamomilla*
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Yohimbe *Pausinystalia johimbe*
Photo ©2022 Steven Foster Group

Black cohosh *Actaea racemosa*
Photo ©2022 Steven Foster Group

Oregano *Origanum vulgare*
Photo ©2022 Steven Foster Group

Horny goat weed *Epimedium* spp.
Photo ©2022 Steven Foster Group

nia as a "rejuvenator" in Ayurveda, the primary traditional medicine system of India.[15,16] In Sanskrit, *ashwa* means "horse" and *gandha* means "smell," and the musty-smelling root is believed to impart the power of a horse to those who consume it. It has been used traditionally for fatigue, to stimulate metabolism, and as an aphrodisiac, among other uses.[15]

In early 2021, as the pandemic entered its second year, it became clear to many that the threat posed by COVID-19 was not over. Seasonal waves of the disease's transmission and the periodic discovery of new SARS-CoV-2 variants kept the virus at the top of many individuals' minds throughout the year. As the American Psychological Association (APA) noted in its *Stress in America™ 2021* report, people remained "in limbo between lives once lived and whatever the post-pandemic future holds." The APA report described widespread, stress-induced difficulties with even basic tasks and decision-making. Compared to pre-pandemic levels, the APA also reported "dramatic spikes" in stress associated with the economy, housing costs, personal safety, and discrimination.[17]

For some, the uncertainty and prolonged stress of 2021 led to what *The New York Times* suggested "might be the dominant emotion of 2021": languishing. This "sense of stagnation and emptiness" arose as many people continued to struggle with the "emotional long-haul of the pandemic," *The Times* noted in a September 2021 article. "Languishing is the neglected middle child of mental health. It's the void between depression and flourishing — the absence of well-being."[18]

In this context, it is perhaps not surprising that mood support supplements saw significant sales increases in 2021.[19] Sales of ashwagandha products marketed for this health focus, which made up 96.2% of all mainstream ashwagandha supplements sold in 2021, grew by 272.1% from 2020 — the strongest sales growth of any health focus category of ashwagandha products.

According to CRN's 2021 survey, "overall health and wellness" was the top reason consumers purchased supplements in 2021.[6] Products that claim to help with mood support, a classification encompassing a range of potential benefits, can arguably fit into this general wellness category. "Supplements that support 'mood' are more popular than ever since COVID-19 hit the United States in 2020 — and consumers still seek them as they adjust to this new world," the New Hope Network noted in a September 2022 article. "It's a somewhat nebulous term, making it perfect for marketing purposes. It's not quite stress relief, nothing too serious as depression, more of a balancing out."[19]

Since it first appeared among the top-selling mainstream herbs in 2018, ashwagandha has shown steady growth, and mainstream consumers have become increasingly familiar with once-obscure terms like "adaptogens" and "Ayurveda." Google searches for "ashwagandha" were up by 70% in 2021, as the Ayurvedic herb continued to solidify its mainstream status. Eight of the top 10 "breakout" Google searches for ashwagandha were related to Goli Nutrition (West Hollywood, California), a company that earned social media fame in recent years after launch-

ing its celebrity-endorsed apple (*Malus* spp., Rosaceae) cider vinegar (ACV) gummies in 2019.[20] In June 2021, the company introduced Goli® Ashwa Gummies, which consumers reportedly purchased at a rate of 200 bottles per minute and sold out after 10 days on the market.[21] Even large national brands have jumped on the ashwagandha bandwagon. Vicks® (Procter & Gamble; Cincinnati, Ohio), for example, introduced ashwagandha into several of its popular ZzzQuil™ products in 2021.[22]

As the popularity of ashwagandha has increased, so too has the scientific literature on its potential benefits. According to the industry publication *Nutritional Outlook*: "Current clinical evidence on ashwagandha is overwhelmingly dedicated to stress and sleep, which is therefore driving product development in that direction. This is bound to change … as the body of scientific evidence for ashwagandha expands beyond mood and stress."[23]

Since 2000, scientists have published more than 1,300 papers related to ashwagandha, as documented in PubMed, including laboratory, animal, mechanistic, and clinical studies. In 2021 alone, 159 papers were published. In addition to stress and sleep studies, clinical trials have investigated ashwagandha's effects on sports performance, sexual function, aging, and memory.[24]

A 2022 systematic review and meta-analysis examined data from 12 randomized, controlled trials on ashwagandha's effects on anxiety and sleep. The authors concluded that "ashwagandha supplementation significantly reduced anxiety … and stress levels" compared to placebo but rated the overall certainty of evidence as "low."[25] A separate systematic review published in 2021 found that ashwagandha supplementation was associated with a consistent cortisol-lowering effect.[26] Cortisol is produced when the body experiences stress, and the hormone is involved in processes that modulate inflammation and blood sugar, among others.[27]

Apple Cider Vinegar

Mainstream sales of ACV supplements more than doubled from 2020 to 2021. Consumers spent $178,382,955 on these products in 2021 — a 128.6% increase from the previous year. Besides ashwagandha, ACV was the only other ingredient in the 2021 mainstream channel with a sales increase greater than 100%. Commonly sold in capsule or gummy form, ACV supplements first appeared on the mainstream channel's top 40 list in 2019. Since then, annual sales of these products have increased by more than $144.7 million, or about 430%, in mainstream retail outlets.

ACV became increasingly used in American folk medicine beginning in the late 1950s, after physician D.C. Jarvis, MD, recommended it as a "cure-all" in his book *Folk Medicine: A Vermont Doctor's Guide to Good Health* (Henry Holt, 1958).[28] In recent years, social media influencers, celebrities, health bloggers, and others have promoted this popular pantry staple for a range of claimed benefits, including weight loss, digestive health, immune support, and skin care, among many others.[29-32]

Supplements marketed for weight loss made up a majority of ACV's mainstream sales in 2021. However, sales of ACV products with this health focus declined by 27.2% in 2021, which suggests that mainstream consumers may be turning to ACV for other potential benefits. Despite this decline in the mainstream channel, sales of ACV supplements marketed for weight loss in the natural retail channel increased by 75.8%.

Other popular ingredients in the mainstream channel, such as fenugreek (*Trigonella foenum-graecum*, Fabaceae) extract and ashwagandha, also saw sales increases for products in the weight loss category in 2021. Even mainstream ingredients commonly associated with weight loss, such as green coffee (*Coffea arabica*, Rubiaceae) extract — which, in general, have seen sales declines in recent years — experienced slightly increased sales.

For some Americans, reduced activity during lockdowns, widespread closures of fitness centers, and pandemic-related dietary changes led to weight gain in 2020 and 2021 —the so-called "quarantine 15."[33,34] According to a February 2021 survey conducted by the APA, 42% of respondents had gained unwanted weight since the beginning of the pandemic.[35]

Few clinical trials have examined the effects of ACV supplements on weight, but several studies have investigated the effects of consuming ACV or other culinary vinegars in liquid form. A meta-analysis published in October 2022 examined the results of 11 clinical trials. The authors concluded that vinegar consumption was associated with significant reductions in body mass index (BMI) and body weight but noted that the findings were of "dubious clinical relevance."[36] Similarly, a 2020 systematic review of 12 clinical trials assessed the effects of "apple vinegar" on metabolic parameters and body weight, but the results were inconclusive "[d]ue to inadequate research of high quality."[37] One small 2018 study of overweight and obese individuals reported significant reductions in body weight, BMI, hip circumference, and appetite after 12 weeks of ACV consumption (30 mL, or about two tablespoons, daily).[38] Excessive vinegar consumption can cause enamel erosion, heartburn, and irritation of the throat and stomach, but levels commonly used in supplements and culinary applications typically are considered to be safe.[39]

Before the pandemic, the weight loss category had transitioned to focus on weight management, as consumers increasingly prioritized a healthy weight to support their overall health. Also, after several congressional inquiries on weight loss supplements and related warnings from the FDA, these products have come under increased scrutiny in recent years.[10] The New Hope Network explained that the category generally "suffers from a bad reputation" in a September 2021 article. "Consumers have been burned by silver bullets that turned out to be ineffective or, worse, dangerous. Still, the market is valued at nearly $2 billion, which shows that even if sales aren't growing, consumers are still very interested."[40]

Ivy leaf *Hedera helix*
Photo ©2022 Steven Foster Group

Valerian *Valeriana officinalis*
Photo ©2022 Steven Foster Group

Apple *Malus* spp. Photo ©2022 Steven Foster Group

Turmeric *Curcuma longa*
All photos on this page
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Psyllium *Plantago ovata*

Papaya *Carica papaya*

Horsetail *Equisetum* spp.

Senna *Senna alexandrina*

Wheatgrass *Triticum aestivum*

Oregano *Origanum vulgare*

Garlic *Allium sativum*

Digestive health was the second top-selling health focus of ACV supplements in the 2021 mainstream channel, and this category of ACV supplements also had the second strongest sales growth during that time, after "cleanse and detox" products. Sales of ACV products marketed for digestive health increased by 127.1% from 2020 to 2021.

The same pandemic habits that may have led to weight gain for some, such as changes in diet and exercise, also are known to affect digestive health. Decreased physical activity and unhealthy food choices, for example, can reduce microbial diversity in the gut.[41] Google searches for "digestive health" had been increasing steadily for at least five years before the pandemic began,[42] but consumer interest appeared to reach a new high in 2021. According to the International Food Information Council's 2021 Consumer Insights on Gut Health and Probiotics survey, nearly a quarter of respondents ranked digestive health as the most important aspect of their overall health.[43]

The popularity of digestive health in 2021 was especially apparent on social media platforms such as TikTok, and this trend continued into 2022. By April 2022, videos with the hashtag #guttok had more than 400 million views on TikTok. "The most popular #guttok videos tend to feature before and after pictures — the swell of bloating under a crop top becomes toned abs," *The New York Times* noted in an April 2022 article. "In a culture that sometimes bristles at mentions of dieting or weight loss, framing these changes around a topic like gut health might be more palatable to an influencer's audience."[44]

Increased sales of ACV supplements marketed for digestive health also may have benefited from the growing body of research demonstrating a connection between gut health and other aspects of health, such as immunity, mood, and sleep.[45] As some supplement users were experiencing "immune fatigue" in 2021, purchasing a digestive health product with multiple potential benefits (including immune health effects) may have impacted sales as well.

Research into ACV's effects on digestive health are limited, but some preliminary studies suggest that ACV may help reduce glucose levels after meals by delaying gastric emptying.[46]

Other Increases

Besides the ingredients already mentioned, five other herbal supplements experienced mainstream sales increases greater than 30% in 2021: maca (*Lepidium meyenii*, Brassicaceae; 62.9%), ivy leaf (*Hedera helix*, Araliaceae; 46.8%), fenugreek (39.5%), rhubarb (*Rheum rhabarbarum*, Polygonaceae; 34.7%), and beet root (*Beta vulgaris*, Amaranthaceae; 31.1%).

Sales Decreases

CBD was the only herbal supplement ingredient with a sales decline of more than 30% in the 2021 mainstream retail channel. This ingredient, which will be discussed in the next section, first appeared on the mainstream top 40 list in 2019 after sales skyrocketed by more than 870% from the previous year, reaching a peak of almost $36 million. Mainstream sales of CBD have decreased each year since then, with 2021 sales totaling $19,361,338 — a 31.6% decrease from 2020. CBD's popularity in 2019 made it the ninth top-selling supplement in the mainstream channel that year; in 2021, CBD ranked 23rd in sales.

NATURAL CHANNEL

CBD

In 2021, for the fourth year in a row, CBD was the top-selling herbal supplement ingredient in natural retail stores. CBD first appeared on the natural channel's top 40 list in 2017, ranking 12th, after sales growth of more than 300% from the previous year. Despite its top rank in 2021, sales of this ingredient have slowed in recent years.

In 2021, CBD sales in the natural channel totaled $38,931,696, a 24% decline. This was somewhat less than the nearly 37% decline seen in 2020. Sales appear to have peaked in 2019, when natural channel consumers spent more than $90.7 million on these products. Still, even after two years of declining sales, natural channel sales of CBD in 2021 were still significantly higher than when the ingredient first appeared on the top 40 list. Consumers spent roughly $31.3 million more on CBD products in 2021 compared to 2017 — a 413.4% increase in annual sales.

SPINS tracks sales of two separate cannabis-derived ingredients: CBD and "hemp seeds and derivatives." According

CBD oil and *Cannabis sativa*
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Table 5. Top-Selling Herbal Supplements in 2021 — US Natural Channel

Rank	Primary Ingredient	Latin Binomial	Total Sales	% Change from 2020
1	Cannabidiol (CBD)	*Cannabis sativa*	$38,931,696	–24.0%
2	Turmeric[a]	*Curcuma longa*	$37,991,516	–5.7%
3	Elder berry	*Sambucus nigra* and *S. canadensis*	$31,246,058	–41.4%
4	Ashwagandha	*Withania somnifera*	$16,728,627	23.2%
5	Wheatgrass / barley grass	*Triticum aestivum / Hordeum vulgare*	$16,318,633	–5.9%
6	Quercetin[b]	—	$15,058,819	137.8%
7	Mushrooms (other)	—	$13,805,139	–6.7%
8	Aloe	*Aloe vera*	$12,891,301	–8.3%
9	Flax seed or oil	*Linum usitatissimum*	$10,717,384	–5.3%
10	Milk thistle	*Silybum marianum*	$10,201,073	13.5%
11	Psyllium	*Plantago ovata*	$9,461,623	4.6%
12	Oregano[c]	*Origanum vulgare*	$9,209,206	–30.7%
13	Spirulina	*Arthrospira* spp.	$8,649,551	–5.8%
14	Apple cider vinegar	*Malus* spp.	$7,685,405	104.7%
15	Echinacea[d]	*Echinacea* spp.	$7,600,413	–38.9%
16	Cranberry	*Vaccinium macrocarpon*	$7,599,121	0.6%
17	Saw palmetto	*Serenoa repens*	$7,573,564	–0.4%
18	Chlorophyll / chlorella	— / *Chlorella* spp.	$7,404,013	43.3%
19	Garlic	*Allium sativum*	$6,670,191	–8.9%
20	Maca	*Lepidium meyenii*	$6,634,812	–4.4%
21	Valerian	*Valeriana officinalis*	$6,486,537	–1.9%
22	Nigella	*Nigella sativa*	$5,774,811	–11.0%
23	Beet root	*Beta vulgaris*	$5,338,296	41.3%
24	Ginkgo	*Ginkgo biloba*	$5,057,675	5.1%
25	Echinacea / goldenseal combo	*Echinacea* spp. / *Hydrastis canadensis*	$4,533,019	–39.9%
26	Algae (other)	—	$4,360,094	26.7%
27	Horsetail	*Equisetum* spp.	$4,211,062	–5.4%
28	Cordyceps mushroom	*Cordyceps* spp.	$3,980,576	15.9%
29	Reishi mushroom	*Ganoderma lucidum*	$3,935,366	–10.4%
30	Papaya	*Carica papaya*	$3,517,493	2.1%
31	Red yeast rice[e]	*Oryza sativa*	$3,380,700	–2.2%
32	Kava	*Piper methysticum*	$3,358,779	1.9%
33	Resveratrol[f]	—	$3,311,990	10.9%
34	Cherry fruit	*Prunus* spp.	$3,291,805	2.8%
35	Ginseng[g]	*Panax* spp.	$3,097,184	–3.8%
36	Ginger	*Zingiber officinale*	$3,073,880	–1.1%
37	Fenugreek	*Trigonella foenum–graecum*	$3,020,713	2.6%
38	Hawthorn	*Crataegus* spp.	$2,923,581	7.0%
39	Hemp seeds & derivatives	*Cannabis sativa*	$2,782,105	–14.1%
40	Boswellia	*Boswellia serrata*	$2,778,470	13.2%

Source: SPINS (52 weeks ending December 26, 2021)

[a] Includes standardized turmeric extracts with high levels of curcumin.
[b] Quercetin is a flavonoid found in various plants, such as onions and berries.
[c] Includes products labeled as containing oregano oil and oregano leaf tinctures.
[d] Includes three *Echinacea* species: *E. angustifolia*, *E. pallida*, and *E. purpurea*.
[e] Red yeast rice is fermented with the yeast *Monascus purpureus*.
[f] Resveratrol is an antioxidant found in various plants, such as grapes (*Vitis vinifera*, Vitaceae) and berries.
[g] Includes Asian ginseng (*P. ginseng*) and American ginseng (*P. quinquefolius*).

to the FDA, "hemp" is defined as *Cannabis sativa* with a tetrahydrocannabinol (THC) concentration of 0.3% or less. (THC is the primary psychoactive compound in cannabis.) *Cannabis sativa* with more than 0.3% THC is considered "marijuana" or "cannabis."[47] SPINS' CBD category typically includes sales of products that contain hemp-based CBD extracts, including CBD oils, gummies, and capsules.

Products in SPINS' hemp seeds and derivatives category, such as hemp seed oil (also written as "hempseed" oil), often are marketed for their nutritional content. Hemp seed oil is rich in omega-3 and omega-6 fatty acids and has high levels of provitamin A, vitamin E, and various minerals (e.g., phosphorus, potassium, and calcium).[48] The seeds of *C. sativa* do not naturally contain cannabinoids, but they can become contaminated with CBD from other plant parts during processing.[49] Sales of hemp seeds and derivatives, which ranked 39th in the natural channel in 2021, also decreased from the previous year. Consumers spent $2,782,105 on these products in 2021 — a 14.1% decline from 2020.

CBD sales declined in 2021 for several possible reasons, including legal confusion, a lack of a clear path for FDA regulation, market saturation, and published reports of inaccurate label claims for some CBD products.

On a federal level, CBD is not considered a legal dietary supplement ingredient. Under section 201(ff)(3)(B) of the Federal Food, Drug, and Cosmetic Act — in what some refer to as the "drug preclusion clause"[50] — any substance that is an active ingredient in an approved drug product, or that is being publicly investigated as such, is excluded from the definition of a legal dietary supplement ingredient.[51] In June 2018, the FDA approved Epidiolex® (GW Pharmaceuticals; Cambridge, UK), the first FDA-approved pharmaceutical drug to contain a "purified drug substance [CBD] derived from marijuana," for the treatment of seizures associated with two rare epilepsy disorders.[52] Since then, the FDA has maintained that CBD is an unapproved drug when sold as a dietary supplement (or in products for external use).[53]

In 2021, the FDA reaffirmed its position on CBD in supplements. Early that year, two natural products companies, Charlotte's Web (Boulder, Colorado) and Irwin Naturals (Los Angeles, California), submitted new dietary ingredient (NDI) notifications to the FDA in an effort to get CBD approved as a supplement ingredient, in accordance with Section 8 of the Dietary Supplement Health and Education Act of 1994. Despite the companies' submitting the required data demonstrating the "reasonable expectation of safety under the recommended conditions of use," the FDA rejected the applications, citing the drug preclusion clause.[50]

The number and variety of CBD products available on the market also may have impacted sales in 2021. According to *Adweek*, approximately 2,000 CBD brands were sold in the United States in 2021 — down from about 3,000 the year before.[54] For some consumers, the sheer number of product options may be overwhelming, and the diversity of advertised claims can muddle one's understanding of CBD's potential benefits.

Based on the results of its July 2021 survey, the Consumer Brands Association reported an "alarming lack of understanding about CBD." On a scale from one to 10, respondents rated their knowledge of CBD an average of 3.3. Nearly three-quarters of those surveyed also were confused about, or had no knowledge of, federal CBD regulations.[55]

In a February 2021 article in *Nutritional Outlook*, Jesse Karagianes, vice president of sales of the CBD natural products company CV Sciences (San Diego, California), was quoted as saying: "[T]he single largest factor which contributed to slow category sales was the deluge of inferior products hitting the market. From unfounded and unlawful health claims to inconsistency in CBD content, many CBD products do not deliver on what customers expect from them."[56]

Table 6. Total US Retail Sales of Herbal Supplements by Type (Single vs. Combo)

	Total Sales	% Total Sales	% Growth
2021			
Single herbs	$6.376 billion	51.6%	5.9%
Combination herbs	$5.974 billion	48.4%	14.0%
2020			
Single herbs	$6.022 billion	53.5%	11.5%
Combination herbs	$5.238 billion	46.5%	24.7%
2019			
Single herbs	$5.402 billion	56.3%	6.3%
Combination herbs	$4.201 billion	43.7%	11.8%
2018			
Single herbs	$5.083 billion	57.5%	6.8%
Combination herbs	$3.759 billion	42.5%	13.1%
2017			
Single herbs	$4.759 billion	58.9%	5.6%
Combination herbs	$3.326 billion	41.1%	12.9%

Source: *Nutrition Business Journal*

The results of several CBD product analyses published in recent years suggest that labels may not always accurately reflect the contents. In December 2021, Leafreport, an online CBD resource owned by Empire Media Network, published the results of analyses of 221 CBD products it sent to third-party laboratories for testing. The labs analyzed 35 oils, 40 topical products, 40 edibles, 22 beverages, 55 pet products, and 29 coffee or tea products. Leafreport found that only 40% of the products matched the levels of CBD stated on labels, with 28% of the products having CBD levels that failed to match label claims by more than 30%. On average, they found that, "the CBD content of the products was off from the label by nearly 25%."[57] A separate paper, published in February 2022, analyzed the CBD content of 11 commercially available CBD oils and found that only four (36.4%) matched the amount stated on the label.[58]

Although CBD sales have slowed, research into the cannabinoid's potential health benefits continues. In 2021, researchers published more than a dozen systematic reviews of CBD's effects, including for mood disorders, anxiety disorders, dementia, multiple sclerosis, appetite, pain, and more.[59] Although many review authors reported inconclusive findings due to low-quality studies, they noted that evidence from human clinical trials seems to support CBD's positive effects on nociceptive pain (i.e., pain in response to stimuli), neuropathic pain, appetite, and neuropsychiatric symptoms in people with moderate to advanced dementia.[60-62] A separate 2021 open-label, randomized controlled study of 3,000 people found that consumers taking one of 13 specified CBD products for four weeks had self-reported improvements in areas such as well-being (71%), anxiety (63%), and sleep quality (61%).[63]

Quercetin

Quercetin had the strongest sales growth in the 2021 natural channel, with sales more than doubling compared to the previous year. Sales increased by 137.8% in 2021 and reached a total of $15,058,819. From 2017 to 2019, sales of this ingredient were relatively steady, but they have picked up since then. In 2020, quercetin had the second highest sales growth (74.1%) in natural retail stores. Since it first appeared in this channel's top 40 list in 2017, quercetin sales have increased by more than 300%, moving it from the 26th top-selling supplement in 2017 to the sixth in 2021.

Quercetin is a flavonol, which belongs to a class of plant pigments called flavonoids. This increasingly well-known phytochemical is found in many fruits and vegetables, with some of the highest quantities reported in onions (*Allium cepa*, Amaryllidaceae), asparagus (*Asparagus officinalis*, Asparagaceae), apples, and cherries (*Prunus* spp., Rosaceae).[64] Laboratory and animal studies suggest that quercetin has antioxidant, anti-inflammatory, immunomodulatory, antiviral, and neuroprotective properties.[65] This ingredient has a variety of common uses, including for immune support, allergies, cardiovascular issues (e.g., high cholesterol and blood pressure), and prostate conditions.[66]

The top three health focuses of quercetin supplements (in terms of total sales) remain unchanged from 2020: allergy/respiratory, cardiovascular, and prostate — each of which experienced triple-digit growth in 2021. However, products marketed for immune support, which made up a smaller percentage of total quercetin sales in 2021, experienced the strongest growth by far. Sales of quercetin supplements in the immune category increased by more than 3,000% compared to 2020.

Quercetin has been the subject of scientific research since at least the 1940s.[67] In 2021, more than 2,300 new papers related to quercetin were listed in PubMed, bringing the total to more than 13,000 publications.[68]

Evidence of quercetin's effects on allergic and respiratory conditions is mostly in the form of laboratory and animal research, although a few human clinical trials on these topics have been conducted. In pre-clinical studies, the phytochemical has been shown to inhibit histamine production and pro-inflammatory mediators, and it may reduce mucus production and airway hyperactivity in allergy-induced asthma, according to a literature review published in 2020. Based on these and other findings, the authors of the review concluded that quercetin is "a good candidate as a supplement for the management and treatment of allergic diseases, especially rhinitis."[69]

Similarly, a 2021 systematic review of quercetin-type flavonols for viral lower respiratory tract infections in animals found that the compounds significantly reduced mortality rates and average viral loads. The authors noted that quercetin supplementation was associated with reduced pro-inflammatory cytokines, reactive oxygen species, mucus production, and airway resistance.[70] At least three human clinical trials have assessed quercetin's effects

Garlic *Allium sativum*
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Asparagus *Asparagus officinalis*
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Cherry *Prunus cerasus*
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on respiratory tract infections. The results of these studies "suggest that oral quercetin may have a beneficial effect on the incidence and duration of respiratory tract infections in certain populations," the authors of a 2020 review concluded, noting that more research is needed.[65]

Given these preliminary findings and the known antiviral and immunomodulatory properties of quercetin, some researchers have investigated quercetin for its potential effects on COVID-19. In March 2020, shortly after the SARS-CoV-2 virus had been sequenced, researchers from the University of Tennessee used a supercomputer to model the potential of 41 small molecules, including quercetin and other natural compounds, to bind to the virus' spike protein that interacts with human receptors. They ranked quercetin as the fifth most promising of the analyzed compounds.[71] Subsequent research by other scientists suggests that quercetin may be able to inhibit viral entry, absorption, and penetration of the COVID-19 virus, and some researchers consider it to be "one of the most promising" natural molecules for use against the virus.[72]

In 2021, researchers published the results of several human clinical trials of quercetin's potential effects on COVID-19. In a pilot study, Di Pierro et al found that quercetin supplementation (Quercetin Phytosome®; Thorne; New York City, New York; containing a proprietary extract made by Indena SpA; Milan, Italy) significantly reduced the severity of symptoms and the time from a positive test to a negative test after infection in people with COVID-19.[73] In a separate study published the same year, Di Pierro et al reported that supplementation with quercetin for 30 days decreased the frequency and length of hospitalization, the progression to intensive care units, and the number of deaths in people with the virus.[74]

Research continued in 2022. In a three-month pilot study of the potential preventive effects of quercetin on COVID-19, Rondanelli et al found that daily supplementation was associated with 14% greater protection against contracting the virus compared to those who did not take quercetin.[75] The authors of a 2022 review of these and other related studies of quercetin concluded that the "results obtained are encouraging, but further studies with a larger number of participants and longer follow-up are needed before considering quercetin for regular prophylaxis of COVID-19."[76]

Media reports of quercetin's potential immune benefits, including those related to COVID-19, may have helped boost natural channel sales of this ingredient in 2021. Recent advances in quercetin formulation also may have increased the appeal of these products. Quercetin reportedly has low bioavailability, ranging from 3% to 17%,[77] and an unpleasant taste, which can pose challenges to product formulators. However, according to an August 2022 article in *Nutritional Outlook*, "ingredient suppliers have overcome these formulation problems with creative new approaches."[78]

More bioavailable products and new product types may help broaden consumer interest in this ingredient, which has not been a top-selling product in mainstream retail outlets for at least a decade, according to previous *HerbalGram* market reports. Some mainstream consumers may also be confused by the numerous, and seemingly unrelated, advertised benefits of quercetin for allergies, viral infections, cardiovascular issues, prostate concerns, and immune health, but ongoing clinical research and consumer education may help clarify the mechanisms behind and main benefits of this ingredient.[78]

Other Increases

Besides quercetin, three other ingredients experienced sales increases greater than 30% in natural retail stores in 2021: ACV, chlorophyll/chlorella (*Chlorella* spp., Chlorellaceae), and beet root. Each of these was among the 25 top-selling ingredients in the natural channel, ranking 14th, 18th, and 23rd, respectively. Of the top health focuses of ACV, chlorophyll/chlorella, and beet root products sold in 2021, energy support was the only category the ingredients had in common. Sales of energy-related supplements containing these ingredients increased in 2021.

According to CRN's 2021 survey, 28% of respondents cited energy support as a reason for purchasing supplements that year, making it the third most common reason for doing so in 2021. This is an increase of 7% from 2020.[6] The APA conducted a separate wellness survey of 1,501 US workers in 2021. In its Work and Well-being Survey, the APA reported that many workers were experiencing a range of fatigue symptoms in 2021, including cognitive weariness (36%), emotional exhaustion (32%), and physical fatigue (44%; up 38% from 2019).[79]

In recent years, consumers began gravitating toward sustainable, non-stimulating sources of energy and away from ingredients such as caffeine in supplements. The same appears to have been true in 2021, especially as consumers were simultaneously interested in, and increasingly sought out, products for relaxation.[80]

ACV supplement sales in the natural channel totaled $7,685,405 in 2021, an increase of 104.7% from 2020. Although ACV products marketed for digestive health made up most sales in the natural channel, ACV products sold for energy support had the strongest sales growth by far in 2021. Recognizable brands such as Bragg® (Santa Barbara, California), perhaps best known for its yellow-and-red bottles of ACV sold in grocery stores around the country, appeared to capitalize on ACV's increasingly popular use for energy support and launched an energy supplement (Bragg True Energy Apple Cider Vinegar) in January 2022.[81]

Sales of chlorophyll/chlorella supplements increased by 43.3% from 2020, totaling $7,404,013 in 2021. Although chlorophyll/chlorella products marketed for energy support made up the smallest category of its overall sales in 2021, supplements sold for this health focus had the second-strongest growth compared to 2020.

Chlorophyll is a pigment that allows green plants to create their own food through the process known as photosynthesis. During this process, chlorophyll in specialized

Fennel *Foeniculum vulgare*
Photo ©2022 Steven Foster Group

cells absorbs light, which is then converted to energy. Using this stored energy, plants convert water and carbon dioxide from the air into glucose and oxygen, which is released as a byproduct. Chlorophyll can absorb all wavelengths of visible light except for green light, which is reflected and the reason why many plants appear green.[82]

Chlorella is a genus of algae that includes at least 13 species. The two most common species used in dietary supplements reportedly are *C. vulgaris* and *C. pyrenoidosa*, which contain high levels of certain vitamins and minerals (e.g., vitamins D and B12, folate, iron).[83] While *Chlorella* supplements are commonly sold for their nutritional profile, chlorophyll is more commonly marketed for digestive health, energy support, and as a "cleanse and detox" product.

Beginning in the first half of 2021, chlorophyll became increasingly popular on social media as the latest "wellness craze." Liquid chlorophyll products (e.g., tinctures), which typically contain a semi-synthetic derivative of chlorophyll known as chlorophyllin, were particularly popular on video-based apps such as TikTok. As *The Washington Post* noted in an April 2021 article, "The tincture bottles come with a medicine dropper, which allows the green liquid to aesthetically swirl into water — perfect for magical TikTok visuals." At the time of the article's publication, videos with the hashtag #chlorophyll had more than 200 million views.[84]

These videos of users drinking liquid "chlorophyll" often were accompanied by a variety of unfounded health claims, including for weight loss, detoxification, energy, and as a treatment for acne and cancer, among others.[84] Despite the prevalence of these claims, scientific evidence supporting any of chlorophyll's potential health benefits is limited. Chlorophyll has demonstrated antioxidant effects, and some pre-clinical research suggests it can bind to and modulate the metabolism of certain carcinogens.[85] At least two small, uncontrolled clinical trials investigated the effects of topical chlorophyll-containing creams on participants with acne or sun-damaged skin and reported some modest positive effects (e.g., reduced oiliness, blotchiness, and pore size).[86,87]

Beet root supplement sales in the natural channel totaled $5,338,296 in 2021 — an increase of 41.3% from 2020. Natural retail sales of this ingredient have increased each year since it first appeared on this channel's top 40 list in 2018. In 2021, sales of beet root products marketed for energy support were more than double the sales of beet root products sold for any other individual health focus. This category of beet root supplements also had the strongest sales growth in 2021.

Beets and other vegetables (e.g., leafy greens) contain nitrates, which the body can convert to nitric oxide (NO). This gas is involved in several essential bodily functions, including blood vessel dilation, muscle contraction, and mitochondrial energy production. Researchers have investigated the potential benefits of nitrate supplementation on sports performance for more than a decade. In recent years, dietary nitrate sources such as beet root juice have gained traction as potential performance enhancers. Many human studies of beet root have focused on the performance of athletes in high-intensity activities such as rowing, cycling, and sprinting. Clinical evidence suggests that beet root can enhance certain processes during exercise, such as reducing the amount of oxygen used by muscles.[88,89]

Research into beet root's other, non-performance related effects (e.g., in people with diabetes and obesity) also is increasing.[88] In 2021, consumers appeared to increasingly purchase beet root supplements for reasons other than sports performance. According to SPINS data, sales of beet root products in the performance and cardiovascular categories decreased by 41.9% and 14.0%, respectively, in 2021. Beet supplements marketed for energy support (+42.7%) and cognitive health (+16.9%) had sales increases in 2021.

Sales Decreases

Four herbal supplements in the natural channel experienced sales decreases greater than 30% in 2021: elder berry, echinacea (*Echinacea* spp., Asteraceae)/goldenseal (*Hydrastis canadensis*, Ranunculaceae) combination products, echinacea (single-herb formulations), and oregano (*Origanum vulgare*, Lamiaceae). Sales of these ingredients, which are commonly used for immune health, significantly increased during the first year of the pandemic.

In 2021, natural channel sales of elder berry and oregano decreased by 41.4% and 30.7%, respectively. These decreases seem to represent a return to pre-pandemic sales levels for these ingredients. Compared to 2019, sales of elder berry and oregano in 2021 were down by only 2.2% and 0.7%, respectively. However, sales of echinacea and echinacea-goldenseal products, which each decreased by around 39% in 2021, were still at least 25% lower than in 2019.

The pandemic undoubtedly has impacted the immune health category. Before COVID-19, sales of immune health supplements typically would follow seasonal patterns, increasing during cold and flu seasons and leveling off during the rest of the year. In 2021, some consumers began to incorporate products with immune health benefits into their year-round health routines.[90,91] "[C]onsumers are seeing immune supplements as something akin to the new multivitamin," explained the New Hope Network in a March 2022 article.[92] The decreased sales of certain immune ingredients, such as elder berry, echinacea, and oil of oregano, may be a result of consumer preferences for multi-herb products that also include immune ingredients — so-called "immune-plus" formulations — instead of single-herb supplements.[93]

Consumer understanding of immunity is becoming more sophisticated, and researchers continue to elucidate the connection between immune health and the digestive system, as well as the effects of stress, sleep, and other factors on immunity.[91] According to a 2022 survey on immune supplements from the consulting firm SPRIM (Bengaluru, India), US consumers rated "new scientific research" as the top reason they would switch immune supplement brands.[8]

Beet *Beta vulgaris*
Photo ©2022 Steven Foster Group

Beet *Beta vulgaris*
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DIRECT SALES

In 2021, the direct sales channel had the strongest sales growth of NBJ's three market channels. This was previously the case from 2017 to 2019, but in 2020, sales growth in the mass market channel briefly overtook those from direct sales. Direct sales of herbal supplements increased by 15.8% in 2021, which is less robust than the 23.7% growth seen in 2020.

Since at least 2005, annual direct sales of herbal supplements have been greater than sales in the mass market channel and natural, health food, and specialty channel. This trend continued in 2021 — direct sales in 2021 were higher than the sales of the other two channels combined.

NBJ's direct sales channel includes sales from the internet, direct media (TV, radio, and print), health practitioners, and multi-level marketing companies.[94] According to NBJ, internet sales include online purchases from Amazon.com and other major retailers (e.g., Walmart), among others.

SINGLE VS. COMBINATION HERBS

Sales growth of combination herbal formulas once again outpaced that of single-herb supplements in 2021. Consumers spent 14% more on combination products in 2021 compared to the previous year, which is more than double the 2021 sales growth of single-herb supplements (5.9%). Annual sales growth of combination products has been greater than single-herb products since 2011.

Combination formulas contain multiple herbs that may work together (either additively and/or synergistically) to support a general health function or related health functions. For example, a combination supplement marketed as a sleep aid may contain herbs with calming properties and other ingredients that support immune health.[95]

As noted in previous *HerbalGram* market reports, single-herb supplements tend to have more specific uses. Kava (*Piper methysticum*, Piperaceae), for example, which is used traditionally in the South Pacific for its calming properties, is often found in preparations marketed for anxiety relief.[96] Sales of single-herb supplements have been higher than those for combination products for more than a decade, but consistently strong sales growth of combination products is closing that sales gap.

CONCLUSION

As COVID-19 vaccines became widely available in 2021 and businesses in some states were allowed to resume regular operations, consumers began to get a sense that life might be slowly returning to normal. The acute feelings of "chaos" and fear that pervaded the early stages of the pandemic in 2020 started to subside for some people.[97] Still, COVID-19 continued to spread in waves throughout 2021, and genetic mutations in the virus led to dangerous new variants, which prompted occasional returns to stricter control measures.[98]

This erratic return to normalcy in 2021 left many Americans in a state of limbo.[17] Ongoing uncertainty and pandemic-related stressors led to widespread feelings of stagnation and emptiness. In its most-read article of 2021, titled "There's a name for the blah you're feeling. It's called languishing," *The New York Times* noted that this feeling "dulls your motivation, disrupts your ability to focus, and … appears to be more common than major depression."[18,99]

"Overall health and wellness" remained the top reason consumers purchased supplements in 2021, but mood and energy support products also were increasingly popular. Social media apps such as TikTok also may have impacted sales of certain ingredients (e.g., chlorophyll, ACV) and health categories (e.g., digestive health), as videos on these topics gained hundreds of millions of views in 2021. Ashwagandha, quercetin, and ACV continued their sales gains from 2020 and were the only ingredients in either retail channel for which sales more than doubled in 2021. Consumers also appear to be more interested in the science supporting supplements, which may explain the increased sales of certain well-researched ingredients and shifts in the most popular health focus categories of ingredients with established uses. Some sales trends in 2021, such as the decreased sales of several immune ingredients, may seem counterintuitive, but the data suggest that this may be another example of a return to normal. HG

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Echinacea *Echinacea purpurea*
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Goldenseal *Hydrastis canadensis*
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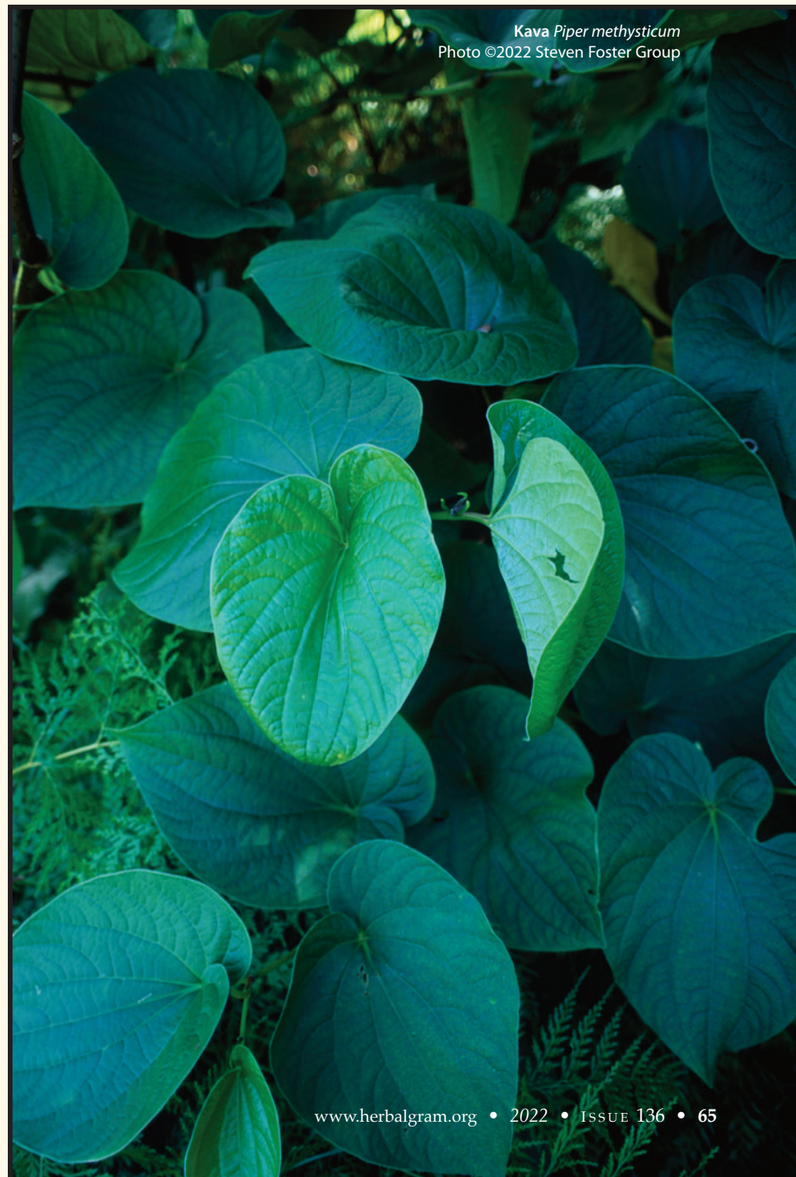

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