NATURAL PRODUCTS INSIDER®

Supplements: Superfoods

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Superfoods Fuel Super Supplements

by Rachel Adams

INSIDER's Take

• New food and drink product launches containing the terms "superfood," "superfruit" or "supergrain" increased 202 percent globally between 2011 and 2015.

• There is no standard definition of "superfood," at least not among health organizations or the scientific community.

• Foods earn "super" status via high nutrient content and established health benefits.

Today's consumers are super concerned with health and wellness, which could be why they're turning to super ingredients to stay in top condition.

According to 2016 data from Mintel's Global New Products Database (GNPD), the number of new food and drink product launches containing the terms "superfood," "superfruit" or "supergrain" increased 202 percent globally between 2011 and 2015. In 2015 alone, launches of such products increased 36 percent. Globally, the United States led the way in 2015 with the most "super" launches (30 percent), followed by Australia (10 percent), Germany (7 percent), the United Kingdom (6 percent) and Canada (6 percent).

Mintel confirmed the surge in super launches is driven by consumer demand for highly nutritious products. The market research firm noted more than seven in 10 consumers in countries such as France, Germany and Italy reported they prefer the health benefits of natural foods such as fruits and vegetables in their products.

For dietary supplement manufacturers and marketers seeking to offer the benefits of these superfoods, a significant challenge arises: There is no standard definition of "superfood," at least not among health organizations or the scientific community.

Fortunately, a lack of definition doesn't equal a lack of direction.

According to Shaheen Majeed, marketing director, Sabinsa, "Although there is no specific definition for 'superfoods' by health organizations, it's a marketing term that implies a food is densely packed with nutrients." He cited examples including cranberries, blueberries and spirulina.

For clarity, Margaret Gomes, director of marketing at NP Nutra, pointed to the Oxford English Dictionary and Miriam-Webster Dictionary, which define superfoods, respectively, as "a nutrient-rich

food considered to be especially beneficial for health and well-being" and "a super nutrient-dense food, loaded with vitamins, minerals, fiber, antioxidants, and/or phytonutrients."

Gomes suggested a combination of both definitions: "A nutrient-dense food, loaded with vitamins, minerals, fiber, antioxidants and/or phytonutrients, considered to be especially beneficial for health and well-being."

Taking the definition a step further, Annie Eng, CEO, HP Ingredients, honed in on what foods are suitable for superfood status: "any edible fruit, seed, nut that is nutritious and that can also be easily processed, extracted, etc., for use in a wide variety of dietary supplements." She explained, "There are still some natural foods that are difficult or too vulnerable to withstand manufacturing to preserve specific nutraceutical compounds."

Considering superfoods are driven by consumer demand for highly nutritious products and "natural" food nutrition, a look at the market can also provide some clarity as to what consumers consider super.

Mintel research, for example, shows certain grains have achieved super status, in part because consumers are increasingly seeking wheat-free diets. The market research firm noted quinoa and buckwheat have become household terms in recent years, but dubbed chia the leader of supergrain growth. Food and drink product launches containing chia increased 70 percent between 2014 and 2015, while teff launches saw growth of 31 percent and quinoa launches grew 27 percent.

Consumers are also turning to ancient grains to super-ize their foods: 30 percent of UK pasta consumers said pasta made with ancient grains such as quinoa is healthier, and 41 percent of U.S. consumers have eaten ancient grain-based cereals.

Super seeds pumpkin and sunflower have also seen considerable growth over the past two years (27 percent and 22 percent, respectively).

Mintel stated turmeric may be the superfood to watch for its anti-inflammatory benefits and its potential in anti-aging beauty food products.

Tina Yuen, M.D., division branch manager and international business development at Puredia, underlined the importance of incorporating superfoods into formats that will fit into consumers' lifestyles.

Supplement manufacturers can incorporate superfood ingredients into products to meet consumer demand for nutrition and convenience, but can't rely on an ingredient's "super" status to substantiate claims and generate sales. Research is essential to ensure superfood ingredients are meeting their super claims and convincing consumers of their health benefits.

Superfruit Superstars

Superfruits are a staple in the superfood lineup. Some of the most well-known superfoods with extensive research to support healthy effects are fruits, including the renowned blueberry and cranberry.

• Blueberry

Blueberries are among the most well-known of the superfruits and for good reason. Blueberries offer an ORAC (oxygen radical absorbance capacity) value of 9,621 µmol TE/100 g, according to USDA, making them among the most potent antioxidant foods available. Blueberries also offer gallic acid—an antifungal/antiviral agent and antioxidant—as well as resveratrol, lutein, zeaxanthin, fiber, vitamin C, vitamin K and manganese.

While blueberries offer many benefits to health, their superfood status is largely attributed to "their high antioxidant property and potential to reduce the effects of age-related loss in brain function,"[1] according to Thomas Payne, U.S. Highbush Blueberry Council.

In addition, blueberries offer anti-inflammatory effects,[2] as well as benefits to skin health[3] and anti-aging,[4] among others.

Consumer research by the U. S. Highbush Blueberry Council confirmed the benefits of blueberries are recognized by consumers. Citing the research, Payne said, "Consumers identify blueberries with antioxidants and they believe blueberries to be healthy."

• Cranberry

Cranberry is a fruit known largely for its role in helping to prevent or treat urinary tract infections (UTIs). According to Dean Mosca, president, Proprietary Nutritionals Inc., E. coli is the primary organism responsible for UTIs. "However," he said, "we are seeing a growing number of infections caused by other bacteria such as Klebsiella, Proteus mirabilis, [Staphylococcus] aureus and Enterobacteria … and in particular ones that are resistant to commonly prescribed antibiotics."

Further, Mosca said evidence shows cranberry has activity against other bacteria, including H. pylori (cause of ulcers) and S. mutans (cause of tooth decay). "Unlike antibiotics, which kill bacteria, cranberry works by changing the bacterial structure and preventing [its] adhesion to tissues," he said. "So it works effectively for prevention without the risk of developing antibiotic resistance."

Mosca pointed to a study published in 2016 in Clinical Infections and Diseases that found Klebsiella in 47 percent of 508 meat products analyzed by researchers and in 10 percent of the 1,728 human participants.[5] Further, they found that a significant portion of this bacteria in meat product (32 percent) and in humans (8 percent) were deemed multi-drug resistant.

Two studies have shown that a whole-berry concentrate of cranberry (as Cran-Max®, from Proprietary Nutritionals, a division of Pharmachem) deters adhesion of Klebsiella in populations experiencing urinary tract infections.[6,7]

The benefits of Cran-Max can be attributed to its content of proanthocyanidins (PAC). The unique whole-berry concentrate is made with a proprietary bio-shield process that "utilizes all the vital parts of the cranberry—skin, seeds, pulp, juice and fiber—to retain the PAC content and protect it so it can reach the lower intestinal tract for maximum benefit," Mosca said.

• Indian Gooseberry

Indian gooseberry, also known as amla, is a nutrient-packed superfood known for its benefits to healthy aging. Among its beneficial nutrients, Indian gooseberry has a high content of vitamin C, as well as protein, fiber, phosphorous, iron, carotene, vitamin B complex and gallic acid. The ingredient has shown antioxidant and anti-inflammatory effects,[8] high phenolic content linked to its anti-aging effects,[9] and anticancer properties,[10] among other benefits.

According to Majeed, Indian gooseberry's superfood status can be attributed to its antioxidant and anti-inflammatory agents, "as such mechanisms may help reduce the risk of non-communicable diseases." He added, "Numerous published articles have extensively reviewed and implicated the above mentioned processes in aging, suggesting they might be helpful in healthy aging."

A phytonutrient derived from Indian gooseberry (as Saberry®, from Sabinsa) "is standardized to contain a minimum of 10 percent b-glucogallin," Majeed said, adding the ingredient's combined ORAC value of 358,600 µmol TE/100 g classifies it as a superfood.

• Maqui Berry

Maqui berry is an antioxidant-packed superfruit, containing high concentrations of polyphenols and anthocyanins. According to Eng, anthocyanins are "powerful antioxidant compounds, exhibiting healthy support for inflammation-based issues." Eng pointed to multiple studies confirming the benefits of maqui:

• Promotes healthy cholesterol – One in vitro study found maqui berry juice was shown to have higher polyphenol content and scored better for total free radical trapping potential and total antioxidant reactivity in antioxidant capacity tests, when compared to different commercial berries.[11] "In addition, maqui berry juice is effective in inhibiting copper-induced low-density lipoprotein (LDL) oxidation, suggesting the anti-atherogenic properties," Eng said.

• Supports healthy immune response – In a study published in 2011, maqui berry juice exhibited strong anti-inflammatory properties by inhibiting NFκB, a key regulator of human immune and inflammatory response.[12] The study also showed that maqui berry juice reduced expression of COX-2, an enzyme responsible for inflammation and pain.

• Supports healthy immune response – "Ca2+ signals regulate the expression of cytokines that are critical for immune responses," Eng said. "Impaired Ca2+ signaling is linked to several inherited immunodeficiency diseases." She cited a study showing delphinidin—an anthocyanin in maqui berry—was shown to activate NFAT, induce IL-2 and IFN-γ production through SOCE-mediated Ca2+ signaling.[13] This study suggests that delphinidin in maqui berry exerts immunostimulatory effects, she concluded.

A form of maqui (Maqui Superberry™, from HP Ingredients) offers 80 percent of its anthocyanins as delphinidin, "reported to exert superior antioxidant and anti-inflammatory effects," Eng said. "The benefits of anthocyanins contained in Maqui Superberry include neutralizing enzymes that can destroy connective tissues, promotes cardiovascular health by preventing oxidation of low-density

lipoproteins (LDL), protects blood vessel walls from oxidative damage, and supports a healthy blood glucose level."

• Seaberry

Seaberry, also known as sea buckthorn, is a fruit native to Tibet and offers more than 190 bioactive nutrients, according to Yuen. Among its nutrients are flavonoids (2 g flavanols per 100 g seaberry), omega-3, -6, -9 and -7, 18 amino acids, 147 vitamins and 14 minerals.

Yuen said seaberry is the only fruit-derived source of omega-7s, which contribute to one of seaberry's primary health effects—its benefits to weight management and obesity. Yuen cited research from the Harvard School of Medicine showing omega-7 can serve as a lipid signal that mediates communications between adipose and other tissues.[14] "This unique fatty acid acts as a major signaling lipid hormone that control several metabolic activities in liver and muscle tissue," she said.

Omega-7 reduced waist circumference and improved insulin sensitivity in mice obese type 2 diabetes with low insulin sensitivity,[15] and also induced satiety in male rats.[16]

Supergrains

As noted by Mintel, supergrains are seeing a spike in interest among consumers, led by the nutrition powerhouse chia (Salvia hispanica).

Chia's super status is based on its nutrient content, including its high content of fiber, protein, omega-3s and various vitamins and minerals such as calcium, potassium and magnesium. Further, chia seeds offer a high concentration of phenolic compounds, contributing to antioxidant activity shown to inhibit 68.83 percent of free radical activity.[17] Chia seeds offer benefits to heart health[18] and women's health.[19]

Formulation

The keys to formulating successful superfood supplements are convenience, simplicity and ease-of-use, Gomes said. "One of the main reasons consumers are turning to superfruits, superfoods and other ingredients is to help supplement their diet, which, in many cases, is lacking due to hectic lifestyle as well as the body's inability to process and absorb all the nutrients."

She pointed to several factors brand owners need consider when incorporating superfoods into their products:

- Taste—will it combine well with the other ingredients?
- Color—will the color blend with other ingredients?
- Odor—will the final product smell pleasant?
- Texture/mouthfeel

- Solubility factor
- Nutrient value

Majeed underlined the importance of the nutritional benefit by emphasizing consideration of bioactives. “Companies should consider isolating bioactives from various superfoods to which the beneficial effects can be attributed and provide variable delivery formats for the consumers to choose from,” he said. “Synergistic action between various bioactives could be studied in order to be appropriately combined and provide a holistic approach. Most importantly, the safety of these superfoods needs to be clearly established before offering them to consumers.”

Popular formats for superfoods range from beverages to bars and powders, Majeed said. Gomes pointed to powdered forms and freeze-dried varieties as popular formats, as well. “Many superfoods are being sold in powdered form, with an increasing number being sold freeze-dried at low temperatures to maintain the most nutrient value and density,” she said.

Looking ahead, Majeed said, “Market reports give us an indication that the functional beverage sector is seeing a significant and consistent rise, which might provide a good opportunity. This is probably because it provides a suitable option for consumers seeking a nutrient-packed meal replacement.”

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