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Healthy Aging

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CONTENTS

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Growing Young

I love this quote by Angelina Jolie, pulled from a recent *InStyle Magazine* article (and included in the article on page 6): "I … see myself aging, and I love it because it means I'm alive—I'm living and getting older."

This quote embodies so much of what aging means to consumers today. Getting older is no longer the enemy. It's not a long, slow walk to a slower, less lively lifestyle. Economic, social, medical and technological advancements have improved the lifespan of the population and quality of life in later years, and consumers are running with it. They see the opportunity to live a full, active life as they age, and they're willing to invest in resources to make the most of it.

They're growing young, if you ask me.

This shift to "healthy aging" from anti-aging, along with the immense, anticipated growth of the elderly population, creates ample opportunity for natural products that aim to support the needs of those growing young.

This Digital Magazine is chock full of insight on top ingredients (research reviews on pages 6 and 11, and insight on astaxanthin for healthy aging and ingredients to support skin health on pages 23 and 27, respectively). We've also outlined the market climate with market trends on page 31, as well as a review of intellectual property trends on page 35. Regulatory considerations round out this issue (page 40), along with a revamped take on our business takeaways, identifying where the market whitespace is and what to expect in the healthy aging category in the coming year.

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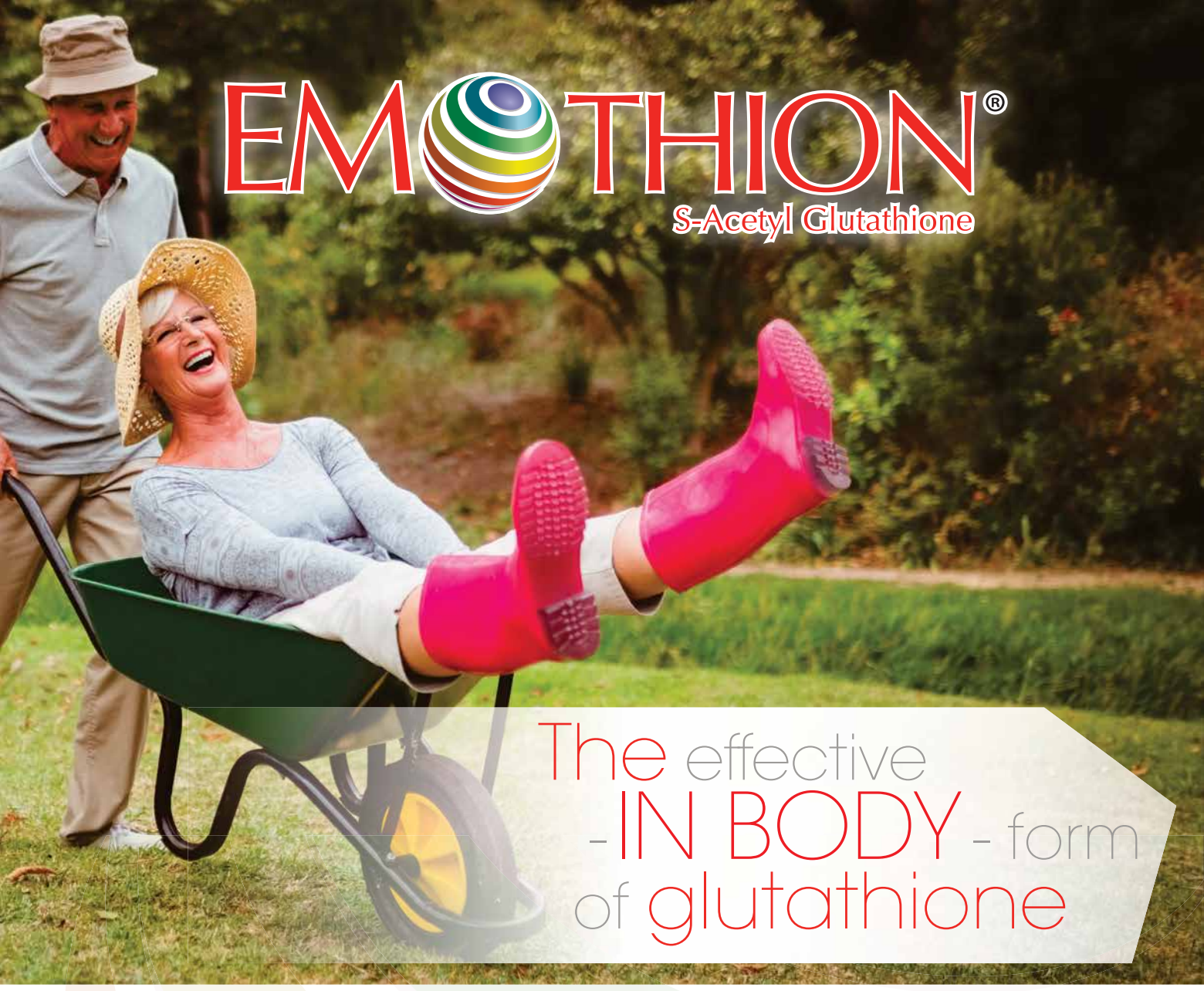

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Nutritional Support for Healthy Aging

by Rachel Adams

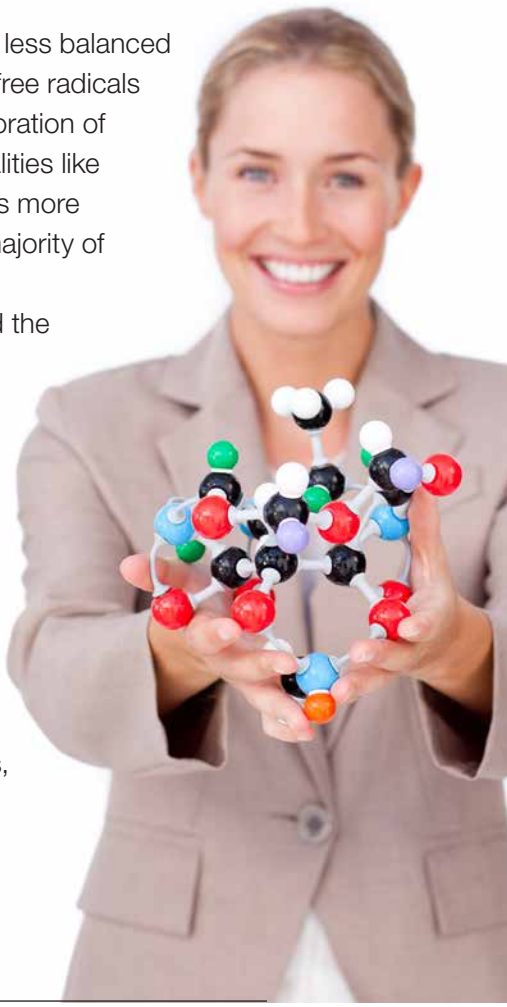
INSIDER's Take

- The United Nations predicted one in six people globally will be over age 60 by 2030, compared to one in eight people over age 60 in 2015.
- Antioxidants are often hailed as anti-aging superstars because of their impact on damage caused by oxidative stress.
- Healthy aging products often focus on areas such as brain health, heart health, bone/joint health and skin health, among others.

American actress Angelina Jolie, at 42 years old, recently shared her thoughts on aging with *InStyle Magazine*: "I … see myself aging, and I love it because it means I'm alive—I'm living and getting older."

Aging is inevitable, even for American movie icons. And while more consumers, like Jolie, aim to embrace and enjoy life in later years, the goal remains to keep the woes of aging at bay.

"Aging is one of the only certain things in life, and yet, it is something the majority of the population tries to prevent, delay or avoid," said Melanie Bush, chief science director, Artemis International. "The reason, in part, is because aging affects every body system and the deterioration can impact quality of life."



As the body ages, its cells and communication systems become less balanced and efficient, Bush explained, which leads to greater production of free radicals and increased signaling of inflammatory cytokines, and thus, deterioration of cells and tissues. "This, in turn, can greatly influence noticeable qualities like brain acuity, vision, pain and skin integrity, and also make conditions more favorable for cancer or chronic inflammation, the precursor to the majority of disease states," she said.

Tryggvi Stefánsson, science manager, Algalif, further emphasized the relationship between aging, free radical production and health. "Younger people are naturally better protected from free radicals and other reactive oxygen species (ROS) through balanced activity of the mitochondria, efficient antioxidant and DNA repair systems, and active protein degradation machinery," he said. "Aging, on the other hand, is generally accompanied by mitochondrial dysfunction leading to increased free radical production that, in turn, leads to an overloading of the defense systems and oxidative damage of cellular components."[1]

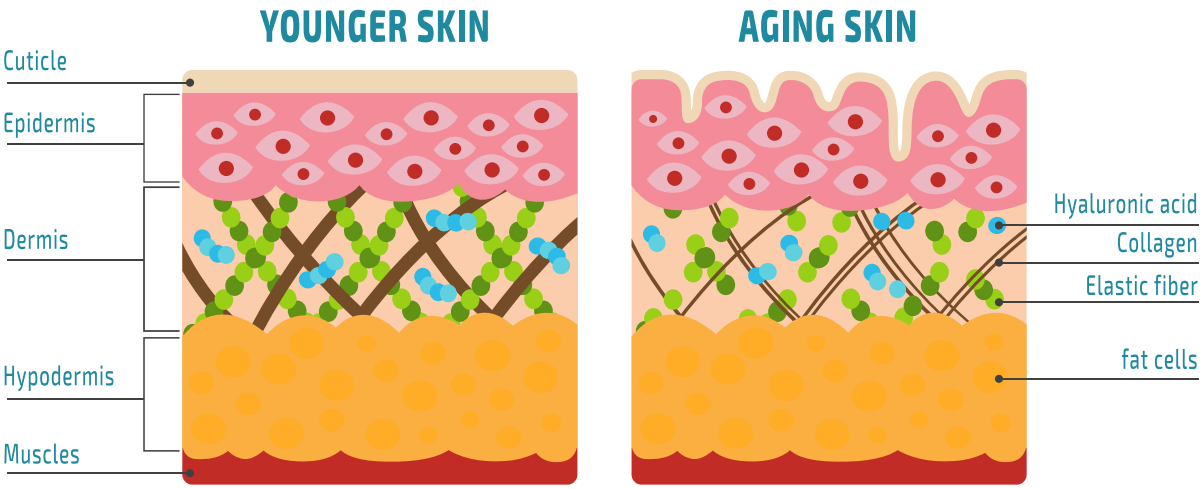
Stefánsson noted several health concerns affecting seniors and mediated by oxidative stress and imbalances between pro-oxidants, such as ROS, and antioxidants, including oxidation of blood lipids (cholesterol and triglyceride),[2] pain and stiffness in joints,[3] cognitive decline,[4] age-related ocular diseases[5] and skin changes such as thinning of skin layers, loss of elasticity and function of oil glands, and accumulation of pigments.[6]

IN THIS ISSUE Viewpoint p.4 Ingredients p.18 Table of Contents p.2

For this reason, antioxidants are often hailed as anti-aging superstars.

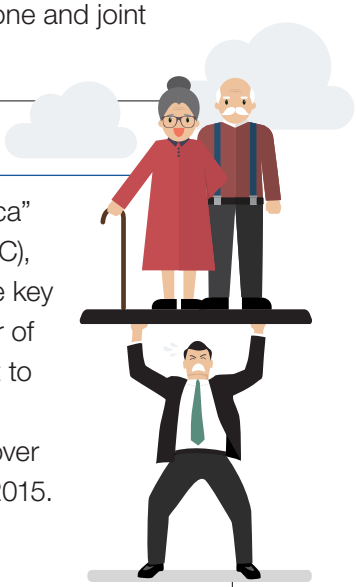
Several ingredients, including vitamins E and C, carotenoids (β-carotene, α-carotene, β-cryptoxanthin, lycopene and lutein/zeaxanthin) and melatonin, among others, have been studied for their potential to protect against oxidative damage and, ultimately, improve health outcomes related to aging, with encouraging results.[7]

However, effectively—and legally—navigating the regulations around supplements claims can be tricky; proving a supplement to be an "anti-aging superstar" likely isn't feasible based on the limitations of clinical trials.



Anti-aging ingredients—or "healthy aging" ingredients, as may be a more accurate term based on market trends—often target specific health concerns faced by aging and older consumers, including heart health, brain health and cognition, bone and joint health, skin health and eye health.

Growth of the Aging Population



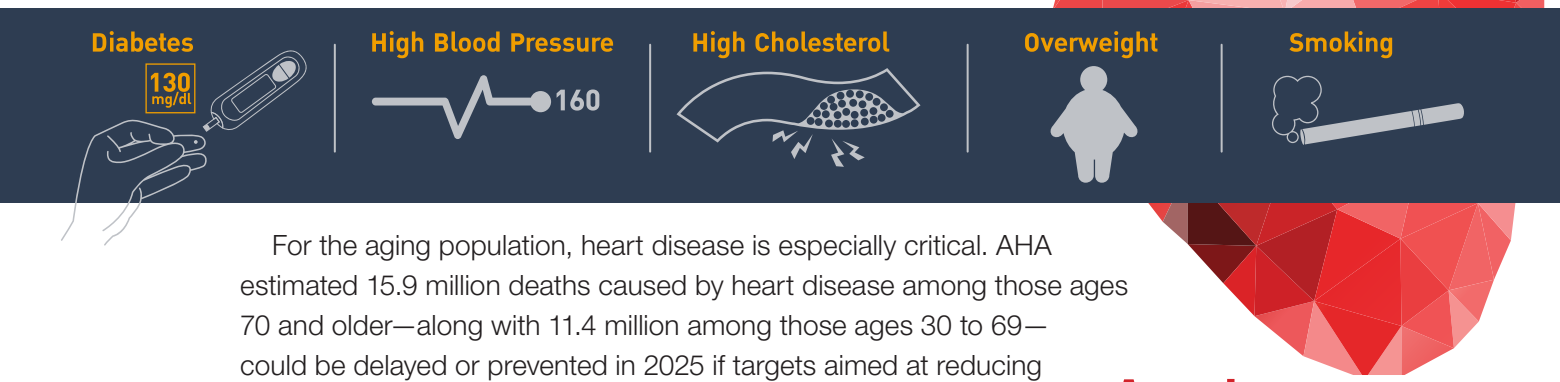
According to the latest "The State of Aging and Health in America" report by the U.S. Centers for Disease Control and Prevention (CDC), longer life spans and the aging Baby Boomer demographic are the key factors contributing to growth of the aging population. The number of those ages 65 and older is expected to double by 2030 to amount to roughly 72 million, which is 20 percent of the total U.S. population.

The United Nations predicted one in six people globally will be over age 60 by 2030, compared to one in eight people over age 60 in 2015. By 2050, the prediction rises to one in every five people.

"This demographic trend is poised to boost demand for healthy aging supplements as aging populations with good levels of disposable income in both developed and emerging markets seek preventive strategies and supplementation to live longer and healthier lives," said Simon Seward, global business director, Algalif.

Heart Health

Heart disease is the No. 1 cause of death globally, amounting to 17.3 million deaths annually, according to data compiled by the American Heart Association (AHA) representing more than 190 countries. In the United States, one-quarter of deaths annually are attributed to heart disease, according to the U.S. Centers for Disease Control and Prevention (CDC). Key risk factors for heart disease include high blood pressure, high cholesterol and poor diet, among others.



For the aging population, heart disease is especially critical. AHA estimated 15.9 million deaths caused by heart disease among those ages 70 and older—along with 11.4 million among those ages 30 to 69—could be delayed or prevented in 2025 if targets aimed at reducing salt intake and tobacco and alcohol use, managing obesity, and lowering blood pressure and glucose levels are met.

American Heart Association estimated 15.9 million deaths caused by **heart disease** among those **ages 70 and older**—along with **11.4 million** among those **ages 30 to 69**—could be delayed or prevented in 2025.

Among its benefits to health, fish oil's impact on the heart is widely known. "When it comes to heart health, fish oil is one of the most studied and well-known sources of **omega-3s**," said David Lakey, vice president of sales and marketing, Bioriginal Food & Science Corp. He referenced a consumer survey conducted by Bioriginal of more than 2,200 fish oil buyers showing heart health is the top reason consumers buy fish oil.

And, for good reason.

A recent study by Mayo Clinic found intake of docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) omega-3s helped reduce the risk of coronary heart disease (CHD), especially among people in higher risk populations, such as those with high low-density lipoprotein (LDL, or "bad") cholesterol.[8] "Today, this is the most comprehensive study assessing the relationship between EPA and DHA consumption and [CHD]," Lakey asserted. Bioriginal's range of sustainably sourced, traceable marine oils deliver EPA and DHA in several formats, including flavorless and odorless varieties that can be used to fortify foods and beverages.

The anti-inflammatory effects of borage oil—a plant-based source of gamma linolenic acid (GLA) omega-6 fatty acid—may lessen the risk of heart disease by lowering plaque formation in the arterial walls of the cardiovascular system.[9] As noted by Lakey, GLA cannot be produced by the body and, thus, must be obtained via food or supplements. Bioriginal's Borage Oil contains up to 24 percent GLA, and is derived via a closed-loop system, ensuring traceability.

Astaxanthin, derived from *Haematococcus pluvialis* microalgae, is a potent antioxidant offering heart healthy effects, among other benefits. In healthy, postmenopausal women with high levels of oxidative stress, natural astaxanthin (12 mg/d for eight weeks) significantly decreased lower limb vascular resistance, a measure of functioning of the circulatory system.[10] Additionally, astaxanthin at doses of 12 and 18 mg/d significantly reduced triglycerides, while 6 and 12 mg/d doses significantly increased high-density lipoprotein (HDL, or "good") cholesterol in a randomized, placebo-controlled trial of 61 subjects with fasting serum triglyceride levels between 120 and 200 mg/dl.[11] Serum adiponectin—a protein hormone involved in regulating glucose levels and fatty acid breakdown—was increased at 12 and 18 mg/d, and changes of adiponectin correlated positively with HDL cholesterol changes.

A blend of **tomato** phytonutrients (as Lycomato™, from Lycored) supported cardiovascular health via supporting healthy circulation,[12] maintaining healthy blood pressure within normal range[13,14] and boosting the body's own protection mechanisms against oxidative stress, while reducing the levels of clinically relevant biomarkers such as C-reactive protein (CRP)—commonly used to track cardiovascular condition.

A standardized tomato nutrient complex (as Cardiomato™, from Lycored) reduced oxidized LDL cholesterol after two weeks of supplementation in a double-blind, placebo-controlled study of 150 healthy subjects.[15]

A meta-analysis of seven randomized, controlled trials published in 2017 indicated the potential of the botanicals **turmeric** and curcumin to improve serum lipid levels in patients at risk of cardiovascular disease (CVD).[16] Specifically, research showed the ability of turmeric and curcumin to lower triglycerides and LDL cholesterol, though no effect on HDL cholesterol was seen.

An extract derived from **lychee fruit** and **green tea** (Oligonol®, from Maypro) improved peripheral circulation as measured by skin temperature changes using infrared thermography.[17] "The elevation in temperature is thought to be a result of the increase of the blood through the vascular smooth muscle, resulting from polyphenol-enhanced nitric oxide production in the vascular endothelium," explained Dan Lifton, president of the Proprietary and Branded Ingredients Group at Maypro.

Vitamin K2 has become a rising star in the heart health arena, especially for women in later stages of life. Vitamin K2 (as MenaQ7®, from NattoPharma) improved arterial stiffness in 244 healthy, postmenopausal women administered 180 µg of MenaQ7/d for three years.[18] Arterial stiffness is a concern for women supplementing with calcium, which can lead to calcification and hardening of the arteries, known as atherosclerosis.

Brain Health

Cognitive decline is a top concern for the aging population, as a top risk factor for dementia and other forms of cognitive degeneration, such as Alzheimer's disease, is age. Additional factors, such as genetics, diet and cardiovascular health, may contribute to cognitive decline.

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GROWTH THROUGH INNOVATION

Researchers have linked oxidative stress and inflammation to motor and cognitive deficits in behavior due to aging.[19] Ingredients offering antioxidant and anti-inflammatory benefits are among options to support cognitive performance.

High-polyphenol **berries**, like blueberries, can offer the antioxidant balance required to reduce age-related deterioration.[20]

The potent antioxidant, astaxanthin, has been shown to improve cognitive function in healthy seniors.[21]

Bacopa monniera, or Brahmi, inhibits inflammatory pathways in the brain, specifically inflammatory cytokines from microglial cells—the immune cells of the brain that participate in inflammation in the central nervous system.[22] Research showed its ability to boost memory in those with Alzheimer's and schizophrenia.[23]

One risk factor for dementia, as reported by the *New England Journal of Medicine*, is high blood glucose levels, even among those without diabetes.[24] Supplementation with **chromium picolinate** (as Chromax®, from Nutrition 21) has been shown to support healthy glucose metabolism and help maintain healthy blood glucose levels.[25]

A top risk factor for dementia and other forms of cognitive degeneration, such as Alzheimer's disease, is age.

A patented complex of bonded **arginine silicate** (as Nitrosigine®, from Nutrition 21) improved cognitive performance in healthy, active adults, as measured by a trail making test (TMT). Nitrogisine boosts nitric oxide (NO), which increases blood flow to working muscles. The improved blood flow may deliver more oxygen and nutrients to the brain, resulting in improved performance.[26] The results were seen in as little as 10 minutes after intake.

Also providing improved performance to the brain are **medium-chain triglycerides** (MCTs). "MCTs are rapidly metabolized in the body and not stored as fat,"[27] Lakey explained. They produce quick fuel for the body, offering long-lasting, sustained energy. MCTs can also help improve cognitive function because ketones derived from MCTs serve as an alternative fuel source to glucose that can recharge metabolic processes in the brain."[28]

Magnesium is an essential cofactor for more than 300 systems that regulate biochemical reactions in the body, including brain and nervous system function,[29] explained Samantha Ford, new business development director, AIDP. AIDP's patented compound of magnesium (Magtein®) raised the brain's magnesium levels,[30] and also demonstrated significant increases in brain synaptic density with supplementation, which then returned to original levels within two weeks of stopping supplementation.[31]

In a randomized, double-blind, placebo-controlled trial, Magtein supplementation for 12 weeks resulted in significant improvements in memory, stress and anxiety in middle-aged and older adults.[32] Additionally, this trial showed a 10 percent improvement in TMT-Part B (TMT-B), which is a clinical assessment of executive function that evaluates visual attention, motor speed and impulsivity. Further, a composite score of several cognitive assessments revealed a statistically significant improvement in cognitive ability, equivalent to a nine-year reduction in "brain age" among participants. Significant reductions in stress and anxiety were also observed among study participants.

Joint/Bone Health

Preserving bones and joints is critical to staying active in later years.

In healthy, postmenopausal women without recurring joint pain, **eggshell membrane** (as NEM®, from Stratum Nutrition) at a dose of 500 mg/d prevented breakdown of cartilage and improved recovery from exercise-induced joint pain.[33] The primary endpoint for this study was any significant reduction in urinary levels of a recognized biomarker for cartilage breakdown: C-terminal, a cross-linked telopeptide of type-II collagen (CTX-II). Results showed a substantial cartilage-protecting effect via a significant decrease in CTX-II compared to the placebo after both the first and second week of the trial.

For postmenopausal women, this research holds significant importance. "Estrogen plays a vital role in cartilage metabolism," said Nena Dockery, technical services manager, Stratum Nutrition, "and when estrogen levels begin to drop, cartilage breakdown often surpasses rebuilding, making these women more vulnerable to joint pain and stiffness, and ultimately more susceptible to osteoarthritis."

Collagen type II derived from avian sternum (as KollaGen II-xs™, from AIDP) was effective at reducing joint pain and improved range of motion and muscle strength in a 30-day, randomized, controlled trial.[34] In addition to collagen, the ingredient provides chondroitin, glucosamine and hyaluronic acid (HA)—the major components of joint cartilage.

Supplementation with low molecular weight HA (as Injuv®, from Soft Gel Technologies Inc.) improved joint mobility and pain associated with age or arthritis in an unpublished clinical trial conducted in Japan in 96 women ages 22 to 65. These results were in addition to the ingredient's benefits to skin health, including improvements in skin moisture, smoothness and firmness. "Unfortunately, HA synthesis declines as we age," said Steve Holtby, president and CEO, Soft Gel Technologies Inc, adding Injuv's low molecular weight allows it to be absorbed and move to its target sites within the body.

In men and women ages 45 to 90 with osteoarthritis (OA), supplementation with **methylsulfonylmethane** (MSM as OptiMSM®, from Bergstrom Nutrition) improved WOMAC (Western Ontario and McMaster Universities) Osteoarthritis Index scores overall and for physical function and stiffness compared to placebo.[35] WOMAC scores improved with OptiMSM supplementation in a later trial of 100 patients with hip and/or knee OA, as well.[36]

To support bone, a proprietary combination of collagen and **calcium** (KoAct®, from AIDP) was proven superior to calcium and vitamin D in slowing down the leaching of calcium from bones, and led to significant improvements in markers of bone synthesis in a randomized, controlled trial of post-menopausal women.[37]

An ingredient derived from ***Boswellia serrata*** gum resin and containing 20 percent AKBA (3-O-acetyl-11-keto-beta-boswellic acid, AprésFlex®, from PLT Health Solutions) has been shown to benefit joints via its ability to inhibit enzymes and biomarkers such as 5-lipoxygenase (5-LOX), matrix metalloproteinase-3 (MMP-3), turmor necrosis factor alpha (TNF-alpha) and interleukin-1 (IL-1) involved in joint inflammation, according to preclinical research. Human clinical trials demonstrated its potential to improve Visual Analog Score (VAS), Lesquesne's Functional Index (LFI) and WOMAC scores in patients with OA.[38,39]

The ability to retain muscle mass is critically important in later life, especially as sarcopenia—degradation of skeletal muscle—has been linked to bone fragility in seniors and, specifically, increased risk of hip fracture in both men and women over age 65.[40]

A patented **amylopectin-chromium** complex (as Velositol, from Nutrition 21) increased muscle protein synthesis (MPS) when combined with whey protein by 48 percent compared to use of **whey protein** alone in a double-blind, crossover study.[41]

The ability to retain muscle mass is critically important in later life, especially as sarcopenia—degradation of skeletal muscle—has been linked to bone fragility in seniors.

Collagen peptides may also support muscle maintenance, according to Lisette van Lith, global director, Peptan®, who pointed to research showing the role of collagen peptides in preserving lean muscle mass and increasing muscle strength in older adults.[42]

Skin Health

"In recent years there is growing interest in ingestible skin care and appreciation that true beauty starts from the inside," said Karin Hermoni, Ph.D., head of science and nutrition, Lycored. "Our physical and emotional wellbeing are all reflected in the way our skin looks at any age and, specifically, as we age."

Importantly, Lycored's **tomato**-derived portfolio was extensively researched in well-controlled, clinical studies showing not only an increase in carotenoid plasma and skin levels, but also proving the efficacy in modulating specific cellular processes that are key to skin wellness.

A proprietary tomato nutrient complex (as Lycoderm™, from Lycored) was shown to protect human skin against ultraviolet (UV) radiation in a double-blind, placebo-controlled, crossover study.[43] Following 12 weeks of supplementation, subjects were exposed to wide spectrum UVA and UVB in a controlled environment. Beneficial modulation of mmp1—a photoaging marker critical in the collagen degradation process—was evident, as well as modulation of biomarkers involved in cellular oxidative stress such as HO-1.

Astaxanthin (as AstaReal®) inhibited inflammation-mediated skin deterioration, including wrinkle formation and seasonal skin moisture decline, therefore preventing progression of skin aging, in a study of 65 females ages 35 to 60.[44]

MSM (as OptiMSM) reduced the appearance of fine lines and wrinkles by supporting the structural integrity of the skin.[45]

GLA found in borage oil could benefit aging skin, as well. "GLA supports a healthy glow by restoring moisture and smoothness to dry or damaged skin that becomes common as we age,"[46] Lakey said.

An extract of lychee and green tea (as Oliginol) reduced deep wrinkles and consistently lightened and brightened complexion, as well as decreased redness, blotchiness, freckles and brown-pigmented blotches.[47]

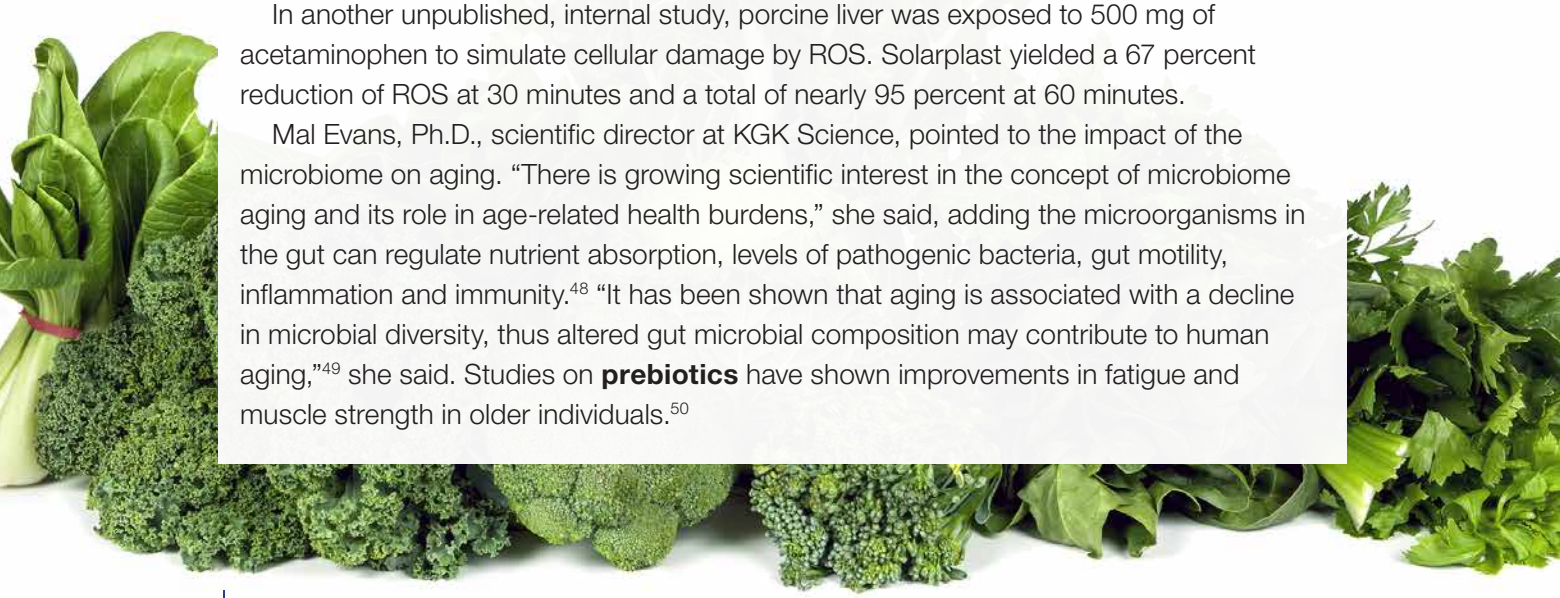
Benefits Beyond

Working at the cellular level to support healthy aging is an extract of organic dark, leafy **greens** enzymatically enhanced by a proprietary manufacturing process (Solarplast, from Deerland Enzymes). "The chloroplasts in dark leafy greens, like spinach, are a rich source of the antioxidants, energy molecules and chaperones that provide a host of health benefits to the body," said John Deaton, Ph.D., vice president of science and technology at Deerland Enzymes. Its latest ingredient calls on chloroplasts to support healthy aging by "optimizing the body's processes through natural energy and repair mechanisms."

In an unpublished study conducted by Deerland Enzymes, the digestive enzymes lactase, trypsin and pepsin were subjected to a 50 percent reduction of activity caused by heat stress. Adding 100 mg of Solarplast to enzyme solutions either during or after heat stress significantly restored the enzyme activity via chaperone refolding.

In another unpublished, internal study, porcine liver was exposed to 500 mg of acetaminophen to simulate cellular damage by ROS. Solarplast yielded a 67 percent reduction of ROS at 30 minutes and a total of nearly 95 percent at 60 minutes.

Mal Evans, Ph.D., scientific director at KGK Science, pointed to the impact of the microbiome on aging. "There is growing scientific interest in the concept of microbiome aging and its role in age-related health burdens," she said, adding the microorganisms in the gut can regulate nutrient absorption, levels of pathogenic bacteria, gut motility, inflammation and immunity.[48] "It has been shown that aging is associated with a decline in microbial diversity, thus altered gut microbial composition may contribute to human aging,"[49] she said. Studies on **prebiotics** have shown improvements in fatigue and muscle strength in older individuals.[50]



Supporting sexual health is ***Trigonella foenum-graecum*** extract (as Testofen/Libifem, from Gencor), which has been shown to increase levels of testosterone in men and oestradiol in women. According to a 2017 publication, the extract reduced menopausal symptoms in a study of 115 women ages 40 to 65.[51] The extract also decreased Aging Male Symptom questionnaire (AMS), a measure of possible androgen deficiency symptoms, and improved sexual function in a study of 120 men ages 43 to 70.[52]

"While we will never avoid aging, we can certainly help our bodies to 'age more gracefully' in terms of keeping the body closer to its normal healthy balance and alleviating unpleasantries," Bush said. "The goal is to grow old while still feeling young (inside and out)."

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Nutrition's Key Role in Healthy Aging

by Jack Grogan

INSIDER's Take

- A whole-body approach to healthy aging targets joint, bone, cognitive and heart health.
- Research shows glucosamine, chondroitin and hyaluronic acid improve joint flexibility and mobility.
- Acetyl L-carnitine, glycerophosphocholine, taurine, phosphatidylserine and huperzine A offer brain health benefits.

The definition of "healthy aging" changes depending on who's defining it. Many Baby Boomers as well as young consumers embrace healthy aging, and research the benefits of natural nutrients and a healthy lifestyle to help them not just live longer, but healthier, more productive lives.

However, with age, the metabolism slows the overall ability to absorb vital nutrients, according to the National Institute on Aging, making it crucial to take a proactive approach to health. Growing older can be a positive experience using targeted nutrients for effective support to help counteract or decelerate the internal aging processes.

While many approach healthy aging as an effort to turn back the biological clock and regain their youth, preventing the aging process is not necessarily possible. Consumers, however, can take steps to slow the biological clock with the end goal to maintain quality of life, both physiologically and mentally.

For a whole-body approach, ingredients considered most important in healthy aging and longevity impact joint and bone, cognitive and neurological, and heart and cardiovascular function, as well as healthy inflammatory response.

Glucosamine is a key building block for tissue integrity. Studies show glucosamine aids in the production of new cartilage, maintains healthy cartilage and supports healthy joint function.[1] It promotes the health and resiliency of joints and connective tissue by maintaining the synovial fluid that lubricates and cushions the joint.

Glucosamine is the precursor of glycosaminoglycans and proteoglycans, substances that are the backbone of joint cartilage and are present in connective tissue throughout the body.[2] The two forms of glucosamine, hydrochloride and sulfate, deliver equally effective amounts of glucosamine. However, glucosamine hydrochloride contains approximately 25 to 30 percent more bioavailable glucosamine for less cost.[3]

Research has shown glucosamine possesses natural anti-inflammatory and anti-aging properties. As one of the most popular supplements taken by people with bone and joint pain, glucosamine aids in treating common symptoms of age-related

IN THIS ISSUE Ingredients p.6 Astaxanthin p.23 Table of Contents p.2

disorders such as arthritis and osteoarthritis (OA).[4] It has been shown to improve mobility, range of motion and general joint health, even in healthy people who do not yet experience chronic joint discomfort.

Hyaluronic acid (HA) gives elasticity to the joints by maintaining the cushion between joints to support optimal flexibility and movement.

Chondroitin sulfate is the primary substance found in cartilage. It inhibits enzymes that degrade cartilage tissue and decreases water retention for synovial fluid production, as well as the ability to utilize glucosamine in the formation of proteoglycans. Proteoglycans support healthy collagen water utilization to give cartilage its desired flexibility, resiliency and resistance, basically serving to cushion the joints. Chondroitin sulfate has also shown the ability to activate chondrocytes, which produce new collagen.[5]

Glucosamine in combination with chondroitin sulfate has been shown to further results in maintaining tissue balance and mobility within joints. The combination of glucosamine and chondroitin is superior to either one alone because of their synergistic properties.[6]

Hyaluronic acid (HA) is a gel-like, water-holding molecule and primary component of the synovial fluid, which lubricates and cushions the joints. HA supports ligaments and tendons in their critical roles in maintaining the stability of joints for controlled motion by promoting healthy synovial fluids.[7] HA gives elasticity to the joints by maintaining the cushion between joints to support optimal flexibility and movement.

Acetyl L-carnitine (ALCAR) has been shown to protect cells throughout the body against age-related degeneration. Cognitive brain function benefits associated with ALCAR include an increase in memory and learning capacity along with an improved speed of memory recall and thought processing. Studies showed subjects' ability to think more clearly with a lengthened attention span, as well as improved overall concentration and focus.[6] Other studies have indicated ALCAR may help to improve sensory perception, especially in the areas of sight and sound.[8] Users also reported faster reflexes and shorter reaction times.

ALCAR supports healthy nerve cell production and the creation of the protective myelin sheath encasing the nerves. It also supports healthy nerve cell communication and reduces the negative effect of stress hormones on nerve cell function.[9]

Glycerophosphocholine (GPC) is metabolically versatile. Once absorbed, it enters the brain, where it is used to make acetylcholine, a choline compound that is recognized for its cognitive-promoting properties through support for cellular membranes. Because it is a precursor of acetylcholine, GPC may aid in preventing cognitive decline by supplying choline directly to the brain. In controlled clinical trials, it was shown to benefit mental sharpness in young, healthy subjects, as well as in the middle aged and elderly.[10] In middle-aged and elderly subjects, it benefited reaction time, improving energy generation and electrical coordination across the brain.

Taurine is important for the support of proper nerve transmission and muscle function. It promotes a sense of calmness, assists in nerve impulse generation and helps stabilize cell membranes by modifying neurotransmitter uptake as well as balance the major electrolytes. Taurine also helps modulate the stress hormones cortisol and adrenalin to support the reduction of anxiety without depressive effects.[11]

Studies have also indicated that consistent supplementation of taurine to aged mice significantly improved the age-related decline in spatial memory acquisition and retention.[12]

Phosphatidylserine (PS) supports healthy acetylcholine synthesis in the brain, the neurotransmitter that is important for memory and recall.

Phosphatidylserine (PS) is found in every cell of the body and is important in optimal brain health and function through support of healthy brain cell membranes. As the brain ages, the phospholipids of the brain can decrease, thus affecting memory and cognitive function. This is evidenced by decreased production of phosphatidylserine in cells and tissues as people enter their 40s and 50s. PS supports healthy acetylcholine synthesis in the brain, the neurotransmitter that is important for memory and recall. By supporting brain cell membranes, PS supports memory, attention span, mental acuity, focus, learning concentration, mood, a healthy myelin sheath and healthy brain aging.[13]

Huperzine A is an alkaloid isolated from the Chinese herb Huperzia serrata. Studies indicate it supports cognitive function in part by blocking the enzyme acetylcholinesterase.[14] Cholinesterase breaks down one of the key learning neurotransmitters, acetylcholine. This then causes an increase in acetylcholine to occur. Increased levels of acetylcholine can support healthy learning, recall, mental acuity and improved cognitive abilities.

In addition to acetylcholinesterase inhibition, other neuroprotective properties have been identified. These protective effects are related to its ability to reduce oxidative stress, support a healthy cellular turnover rate, protect mitochondria and upregulate nerve growth factor.[15]

Coenzyme Q10 (CoQ10) supports healthy cardiovascular function by helping produce energy within the mitochondria of cells. Every cell depends on this for energy production, and this is especially true for the heart. While each muscle cell in the biceps contains 200 mitochondria, every heart cell has 5,000. As well as its energy promoting properties, CoQ10 supports healthy brain function by protecting the part of the brain that is responsible for producing the neurohormone dopamine, which supports healthy mood, focus, concentration and mental energy.[16]

Jack Grogan is chief science Officer for Uckele Health & Nutrition. He is an expert in hair mineral analysis, a valuable tool in determining the causes of nutritional imbalances or deficiencies. With experience in the fields of biology, biochemistry and nutrition, he has been influential in the development of hundreds of proprietary nutritional formulas and programs. Uckele Health & Nutrition is a health company committed to nutritional science and technology, and formulating and manufacturing a full spectrum of quality nutritional supplements incorporating the latest nutritional advances.

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Astaxanthin: A Healthy Aging Antioxidant

by Tryggvi Stefánsson, Ph.D.

INSIDER's Take

- Aging often brings a reduction in cellular energy and an increase in free radical production, which leads to oxidative damage.
- Astaxanthin, a carotenoid produced from the microalgae *Haematococcus pluvialis*, is an antioxidant used in healthy aging applications.
- Research has shown astaxanthin's benefits to heart, skin, immune, cognitive and eye health, all of which are common aging ailments.

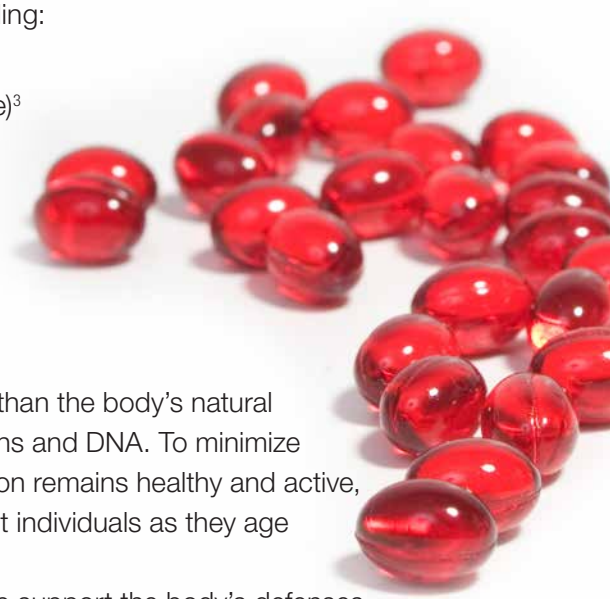
Aging happens.

Healthy aging is not about turning back the clock, or denying the realities of age. It is about optimizing opportunities for health and well-being throughout life. Aging is generally accompanied by a reduction in cellular energy production, and increased free radical production. This leads to an overloading of defense systems and oxidative damage.[1]

The normal aging process is accompanied by numerous health challenges, which may vary from individual to individual, and are impacted by several factors, including nutrition, genetics, lifestyle, environment and life events.

Younger people are better protected from free radicals and other reactive oxygen species (ROS).[1] As people age, the body's antioxidant defense system becomes weaker and more susceptible to the effects of oxidative stress. Oxidative stress can impact several health issues associated with aging, including:

- Age-related ocular diseases[2]
- Oxidation of blood lipids (cholesterol and triglyceride)[3]
- Increased risk of heart disease[3]
- Cognitive decline[4]
- Joint pain and stiffness[5]
- Thinning of skin layers and loss of elasticity[6]
- Accumulation of skin pigments[6]
- Reducing reactive oxygen species (ROS)



Oxidative stress occurs when more ROS are generated than the body's natural defenses can counteract. This damages cells, lipids, proteins and DNA. To minimize rising health care costs and help ensure the aging population remains healthy and active, the natural products industry has a responsibility to support individuals as they age actively and comfortably.

Research has repeatedly demonstrated antioxidants help support the body's defenses and counteract the damaging effects of ROS. Research continues to show natural astaxanthin is one of the most potent antioxidants available, and is particularly beneficial for healthy aging applications.

IN THIS ISSUE Ingredients p.18 Skin Care p.27 Table of Contents p.2

Proven Potency

Studies demonstrate natural astaxanthin is 6,000 times more powerful than vitamin C, 770 times more potent than coenzyme Q10 (CoQ10), 100 times more powerful than vitamin E, and five times more powerful than β-carotene in trapping energy from singlet oxygen, one of the most common ROS found in the body.[7]

A naturally cultivated form of astaxanthin is produced from the microalgae *Haematococcus pluvialis*. Natural astaxanthin is regarded as superior due to its strength, which is 50 times stronger than synthetically produced astaxanthin.[8]

Backed by Science

Science validated the significant benefits of astaxanthin supplementation for healthy aging. This carotenoid provides support for heart, skin, immune, brain and eye health.

Astaxanthin supports **cardiovascular health** by improving blood lipid profiles in healthy seniors. It has a protective effect against cholesterol and triglyceride oxidation.[9,10] Astaxanthin also helps boost mitochondrial energy delivery, which helps the heart muscle contract more powerfully and efficiently.[11]

Science validated the significant benefits of astaxanthin supplementation for healthy aging. This carotenoid provides support for heart, skin, immune, brain and eye health.

Astaxanthin supports normal healthy **skin** by improving skin elasticity and moisture, and reducing wrinkle formation.[12] Human studies showed 6 mg/d of astaxanthin for six to eight weeks may reduce wrinkles, water loss and age spots.[13] Astaxanthin also improved elasticity, moisture content and texture of the skin, and the effects seem to be enhanced when combined with the application of astaxanthin topically.

Studies demonstrated astaxanthin helped balance the **immune system** and helped suppress overactive immune responses that can create inflammation.[14]

Astaxanthin helped improve **cognitive function** in healthy, aged individuals. A human trial that evaluated astaxanthin supplementation with a 12 mg daily dose for 12 weeks suggested astaxanthin may help protect against age-related cognitive decline.[15] Another study demonstrated daily supplementation with 12 mg of astaxanthin improved cognitive health and learning scores in healthy, middle-aged and elderly subjects with age-related forgetfulness.[16]

Astaxanthin helped support **eye health**, and protected the eyes by reducing oxidative damage and improving blood flow in capillaries.[17,18,19] Studies of individuals with age-related macular degeneration have demonstrated significant improvements in retinal health when given astaxanthin and other carotenoids.[20]

Together, these and other recent scientific findings demonstrate natural astaxanthin, as a potent scavenger of ROS, is a valuable ingredient for healthy aging formulations.

Tryggvi Stefánsson, Ph.D., science manager, Algalif, earned his doctorate degree in microbiology and genetics from Eidgenössische Technische Hochschule (ETH) Zurich in Switzerland. He joined Algalif in early 2014 and since 2015, has led the company's research and development (R&D) and Scale-up department as science manager. Among other things, Stefánsson's department oversees the optimization of cultivation parameters.

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2018 Healthy Aging Skin Care Ingredient Trends

by Lindsey Carnett

INSIDER's Take

- Consumers are increasingly seeking skin care products that contain active ingredients backed by clinical research.
- Clean ingredients that fight pollution and skin stressors that consumers encounter daily are more popular.
- Bone broth, probiotics and collagen are hot ingredients in skin care products that help consumers age gracefully.

The stresses and strains of modern life, the role of social media and society's emphasis on youthfulness continue to keep consumers transfixed by anti-aging products. The global anti-aging market is anticipated to grow at a compound annual growth rate (CAGR) of 7.8 percent between 2013 and 2019, with the market's value expected to amount to US$191.7 billion by 2019, according to Statista. The United States is a key market in the global skin care and cosmetics industry, generating an estimated revenue of approximately $62 billion in 2016.

The United States is a key market in the **global skin care** and **cosmetics industry**, generating an estimated revenue of approximately **$62 billion** in 2016.

Continual product launches and the dominance of digital media are propelling the anti-aging industry into new territories, with consumers wanting and expecting formulations that contain active ingredients backed by clinical research. Consumers want to be on top of the latest trends and experiences, while ensuring healthy aging promises made by brands will ring true.

Boosted actives: Patented peptide blends available in a boosted version appeal to consumers who want enhanced benefits and feel like they are receiving more product for their dollar. Brands such as Clinique are embracing this trend, factoring in daily routines such as exercise into this new product line. Its Clinique Fit range targets exercise-specific concerns such as clogged pores and redness, focusing on active ingredients that can treat these skin care concerns.

Toxic-free ingredients: The focus on eco-friendly alternatives is in vogue, and use of natural ingredients like willow bark is appealing to consumers looking for clean anti-aging skin care products. A fatty acid derived from pressed conifer seeds, sciadonic acid, (as DELTA-5 from Scia Essentials) reduces acute inflammation of the skin (*Fitoterapia*. 2006 Jun;77(4):262-7). Additionally, manufacturers will look to remove toxins from their product packaging, switch from plastic containers, tubes and bottles and use packaging constructed from recycled glass or natural, plant-based materials.

Clean beauty: Clean beauty products free of ingredients perceived as harmful such as silicones, parabens and sulfates are set to dominate 2018. Clean beauty brands such as KINN are predicting a shift toward plant-based products, as well as

IN THIS ISSUE Astaxanthin p.23 Market Data p.31 Table of Contents p.2

embracing the materials in the packaging of their products. Expect an increase in brands developing and producing products that contain ingredients such as kale, algae and spinach, which have a positive effect on our bodies and minds.

It has also been suggested that there will be a move toward less water in products, given that demand could outstrip supply. This trend is dominant in both Korean and Japanese beauty, with consumers captivated by the aesthetic Japanese principles of understated beauty and energized calm, and how natural ingredients can help tackle aging skin.

Pollution fighters: The world can be a dirty place, and combatting environmental "skin stressors," such as air conditioning, heating, blue light from smart devices and captive bacteria, is a trend that will continue to grow. Glycolic acid is a popular component, and deemed safe by the American Dermatology Association. A whole host of products include glycolic acid, especially the popular facial sheet masks. Similarly, products that offer deep skin hydration and protection against smog, vehicle emissions, dirt and smoke will continue to appeal to busy consumers who want to fight aging in a fast and easy-to-use way.

Bone broth: With a strong activity link between the gut and the skin, research has demonstrated the connection between an individual's diet, skin condition and premature aging (*Gut Pathog*. 2011 Jan 31;3(1):1. DOI: 10.1186/1757-4749-3-1). Bone broth contains collagen and gelatin—two proteins that can strengthen and repair the lining of the gut—leading to better absorption of nutrients and minerals (*Clinics* (Sao Paulo). 2010 Jun;65(6):635-643. DOI: 10.1590/S1807-59322010000600012). This helps improve skin elasticity, primarily through the presence of hyaluronic acid that is popular in beauty routines. Bone broth also contains this acid, helping to fill the space between collagen and elastin that keeps skin supple.

Bone broth also contains hyaluronic acid, helping to fill the space between collagen and elastin that keeps skin supple.

Probiotics: Perhaps the most well-known super ingredient, probiotics have strong cleansing properties, and a clinical study found that a solution containing 5 percent lactobacillus was effective at treating acne (*J Cosmet Sci.* 2012 Nov-Dec;63(6):385-95). Many big skin care brands have realized the popularity, possibility and appeal of probiotics to consumers.

Additionally, taking a probiotic supplement to boost the productivity of skin care products could be a trend to watch.

Bio-hacking: Bio-hacking explores human biology, and finds ways to exploit certain practices or ingredients for increased health and wellness. When it comes to skin, this trend can help consumers directly tackle problems, including the aging process. Using functional compounds and potent ingredients like glycolic acid enable the consumer to hack their way to healthy, glowing skin. Brands like Eve Skincare use therapeutic-grade, natural, active ingredients in their bio-hacking techniques, with one particular treatment containing an herbal peat comprised of 700 varieties of healing plants.

Collagen: The maintenance and production of collagen continues to be an important driver in the skin care industry. Collagen prevents connective tissues from stretching and helps to keep skin supple, plump and line free, and its popularity in skin care is used to synthesize its production. Serums are a popular product for collagen production, with amino acids used to stimulate the skin and booster products containing copper peptide used to weave collagen and elastin together.

As the skin care and supplement industry continues to boom, consumers will look to participate in and find out more about trends that claim to hinder the aging process. With manufacturers keen to capitalize on the next big thing and digital media driving product sales, 2018 may bring some of the most exciting anti-aging solutions yet.

Lindsey Carnett is CEO and president of Marketing Maven, an Inc. 5000 and Entrepreneur 360 company and integrated marketing firm ranked No. 15 in the United States in the beauty category by third-party ranking company O'Dwyer's PR. She is a FOLIO Magazine 2015 Top Women in Media Honoree, and is noted for helping consumer brands with unique, clinically tested, and substantiated formulation launches in the U.S. market.

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The Evolution of Healthy Aging

by Irina Barbalova and Hannah Symons

INSIDER's Take

- For consumers, healthy aging balances prolonging life and prolonging quality of life, with a focus on holistic wellness of spiritual, mental and physical well-being.
- Life expectancy is on the rise, but older consumers and their specific needs are largely undervalued and under-represented in current natural product offerings.
- Younger people are adopting health behaviors that were traditionally practiced by older generations, such as taking supplements for eye, bone and joint health.

According to Euromonitor International, healthy living is one of eight megatrends shaping consumer markets in the years to come. Healthy lifestyle habits are becoming standard, as concerns over obesity, food sensitivity and the number of people affected by different types of diseases continue to rise.

Crucially, a more holistic approach to wellness is being adopted, which encompasses spiritual and mental well-being, alongside physical health, gut health and the outward manifestation of health. Consumers no longer measure their health by one easily identifiable factor, such as weight; they are instead looking to take care of their general well-being through a broader lens. Through this movement, consumers are recognizing health and aging are not mutually exclusive, and the two states can occur in parallel, if the right approach is taken.

Health care services aside, the case for healthy aging is well-documented. Yet, the struggle to convince consumers to make healthier decisions 50 years before rewards may be reaped is no mean feat—but this is changing.

Aging can be a positive process, if the right approach is taken, and perhaps a few new habits are adopted and a few old habits are broken. Through a holistic approach encompassing mind, body and soul, companies in all sectors can transform an aging population from a challenge into an opportunity.

The Pursuit of Healthier Lifestyles

Developing a healthier lifestyle is driven by a desire for two things: the ability to live a quality life in the present and the ability to live a long life in the future. It is the distinction between prolonging life and prolonging quality of life, which differentiates the topics of health and aging. Healthy aging balances both.

Healthy aging is a concept promoted by the World Health Organization (WHO) to encourage a healthy and inclusive lifestyle at all stages of life. Recognition of the influence of better life choices early on and in delaying or preventing chronic illness is paramount. WHO sees healthy aging as a combination of factors that act together not only to prolong life, but to improve the quality of life as an individual ages.

Healthy aging is shaped by what we eat and drink, how we perform and look physically, how we live, work and play, and how we think and behave.

IN THIS ISSUE Skin Care p.27 Intellectual Property p.35 Table of Contents p.2

Life Expectancy on the Rise

Life expectancy is rising around the globe; this, together with declining birth rates, has resulted in a growing aging population, which is both an economic challenge and a business opportunity.

As populations age, life's milestones are deferred, and more people in the later stages of life assume the typical responsibilities of their younger counterparts, such as working and caring for children, all of which require optimum physical and cognitive form.

Developing Cities at the Heart of the Aging Conversation

Cities are often associated with younger populations, given their predisposed nature of attracting those in search of job opportunities. However, most cities in the world are projected to display a more rapid surge in the over-65 segment, as opposed to their working-age populations (ages 15 to 64 years) from 2016 to 2030. By 2030, 15 percent of the global urban population is expected to be over 65—equivalent to 766 million people, according to Euromonitor International.

Considering the changing demographic nature of cities, measures are being implemented to better adapt the urban infrastructure to the elderly—emerging from the need to ensure residents of cities can maintain quality of life as they enter older age.

Younger consumers are pursuing prevention over treatment strategies when it comes to aging. The focus is on optimizing healthy years, with the added incentive of living longer.

The Young, the Old and the Ageless

Younger consumers are pursuing prevention over treatment strategies when it comes to aging. The focus is on optimizing healthy years, with the added incentive of living longer, since old age no longer necessarily equals frailty. Encouragement to take precautionary measures as well as preparation for a long working life are central to nurturing healthy aging in the young.

Understanding older generations as they are right now has value. Many are outliving the generation before them, and are doing so with more money in the bank, but not necessarily in their pockets. These consumers continue to make societal contributions, as caregivers or as part of the workforce, but they are largely undervalued and under-represented as a consumer group, and have specific needs.

The narrowing of generation gaps has given rise to the "ageless" generation, who favor age agnosticism. These consumers are alienated by age labels and favor segmentation based on needs, interests and values. This cohort spans across age groups, but is most commonly associated with Baby Boomers or Generation X, the first to be impacted by the blurring of generational boundaries.

Prevention Across Age Groups

Younger people are adopting health behaviors that were traditionally seen as being associated with older generations, such as taking dietary supplements to address archetypal age concerns, including eye, bone and joint health, shunning fast food in favor of slow food, and prioritizing sleep.

Nonetheless, young people remain dubious about making too significant lifestyle changes with a view to the future; many in this generation face daunting prospects such as "the age of no retirement." A pinch of skepticism means many young people still place greater emphasis on healthy practices pertaining to status and appearance over actively pursuing a strategy of long-term future proofing. Fortunately, as health emerges as the new wealth, narcissistic motivators inadvertently reap healthy rewards.

While health matters are a vital consideration for those over the age of 60, these consumers are focused on professional health care services aimed to cure or treat. It is harder to convince older consumers of newer concerns, such as obesity and the importance of nutritional value. Most consumers older than 60 show awareness of the threat from an unhealthy lifestyle, but in practice do little to change.

Life expectancy and healthy life expectancy have a difference of at least eight years across all regions. This untapped consumer base is looking for ways to prevent and manage the onset of age-related diseases, such as Alzheimer's disease, loss of vision, bone and joint problems or cardiovascular diseases. Targeting these conditions could close the gap between life expectancy and healthy life expectancy.

On the other hand, Baby Boomers are redefining aging. They are less conservative than their predecessors, are no longer willing to take a passive attitude toward aging, and are proactive in their attempts to remain youthful, healthy and energetic for as long as they can.

Products targeting healthy aging need clear communication of functionality, and positioning must avoid age and remain claim-focused. For example, the demand for anti-aging claims is increasing, but the adoption of anti-aging-labeled products is decreasing, while more consumers are adopting preventative regimes countering general lifestyle aggressors without the age label.

Healthy Aging: Transforming Challenges into Opportunities

The desire for healthier lifestyles is transforming stereotypes about aging across all demographics. Recognition of prevention throughout all life stages is paramount. This lifestyle shift provides a significant opportunity for businesses to diversify, tailor and differentiate their brands by weaving health into product and service concepts across ages. The more of these healthy living attributes a brand can reflect and connect to, the stronger it will be, and the deeper the relationship it can create with these health-conscious consumers.

Irina Barbalova is global lead, beauty and personal care, and Hannah Symons is beauty and fashion research manager, both at Euromonitor International.

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Intellectual Property Trends in Healthy Aging

by Andreas Baltatzis and Gideon Eckhouse

INSIDER's Take

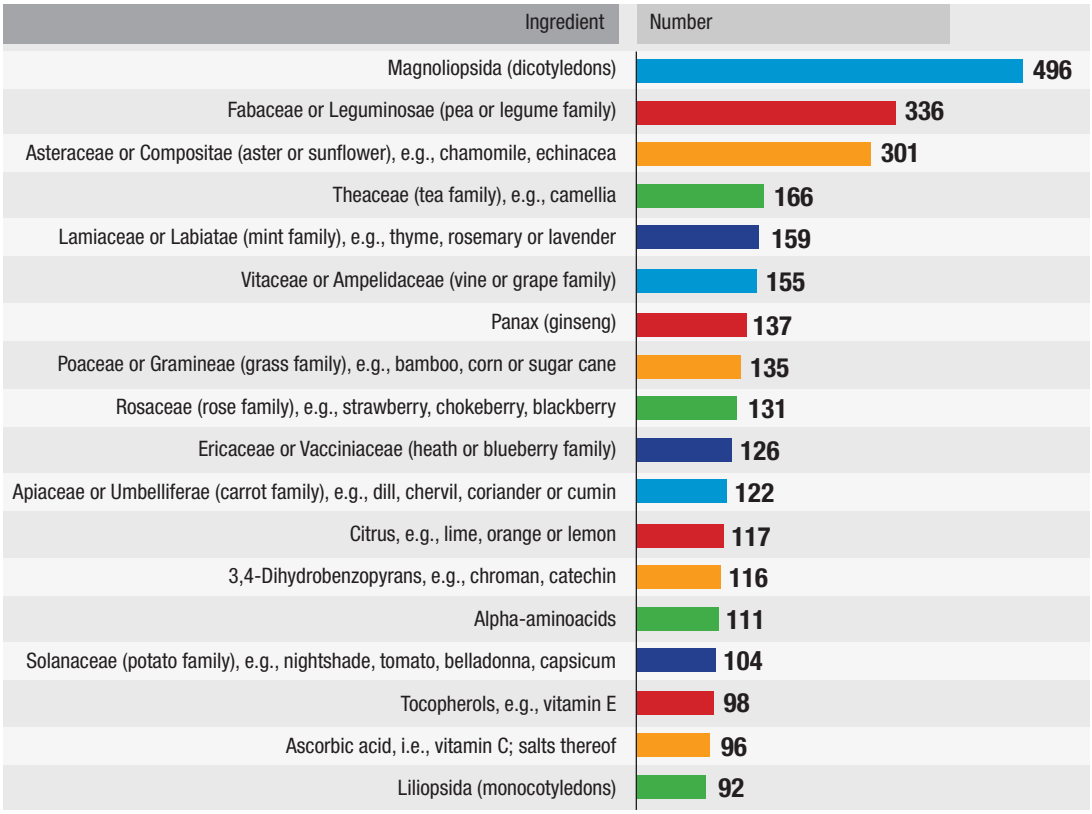
- Pea, chamomile, mint and rosemary are among the top ingredients used in healthy aging natural product applications.
- Healthy aging patent applications have been consistent since 2001, but 2016 may be the start of a downward trend.
- Brands are more likely to use the anti-aging terms "wellness," "age" or "aging" in product names rather than brand names.

Advances in health and medicine continue to increase global life expectancy. This tremendous achievement resulted in increasing the population of aging adults. Aging adults seek products that will help them pursue healthy and active lives into their elderly years. As the population continues to age, the market will need new products and brands to meet this growing consumer base.

Popular Ingredients

Many innovations containing natural product ingredients are directed to mitigating age-related disorders. By combining specific search terms along with categories of active natural product ingredients, companies can identity market trends, as well as areas open to new innovations. Patent applications for nutritional supplements are often classified according to their main active ingredient.

Most Popular Main Ingredients in Healthy Aging Patent Applications, 1998 to 2018

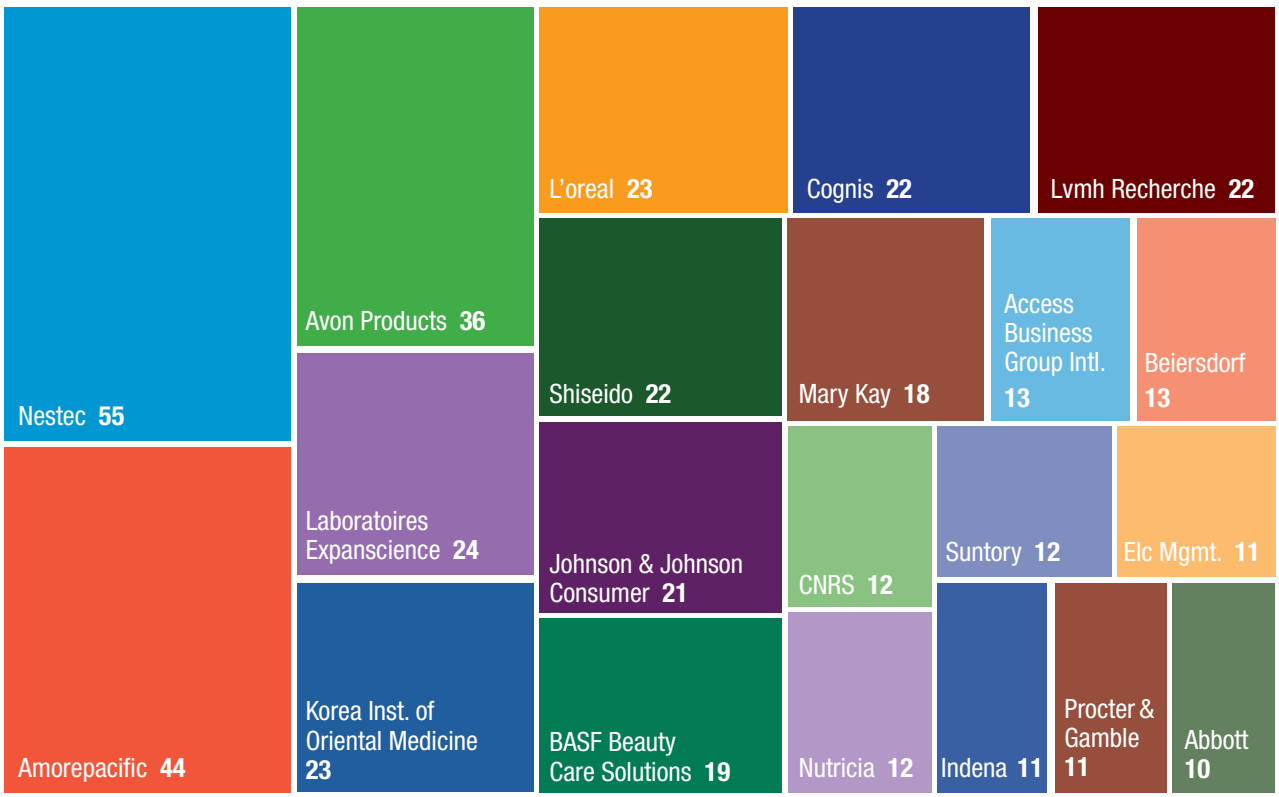


IN THIS ISSUE Market Data p.31 Regulatory Insights p.40 Table of Contents p.2

Leading Innovators

A wide variety of companies innovate in healthy aging products. Nutrition, food and biopharmaceutical companies may produce ingestible supplement formulations. Cosmetic innovations are needed, particularly in skin care.

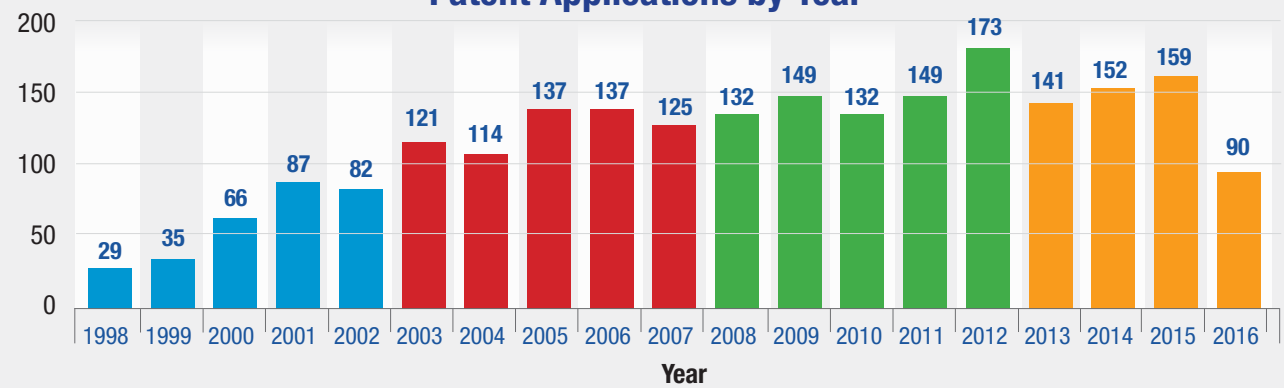
Leading Patent Filers, 1998 to 2018



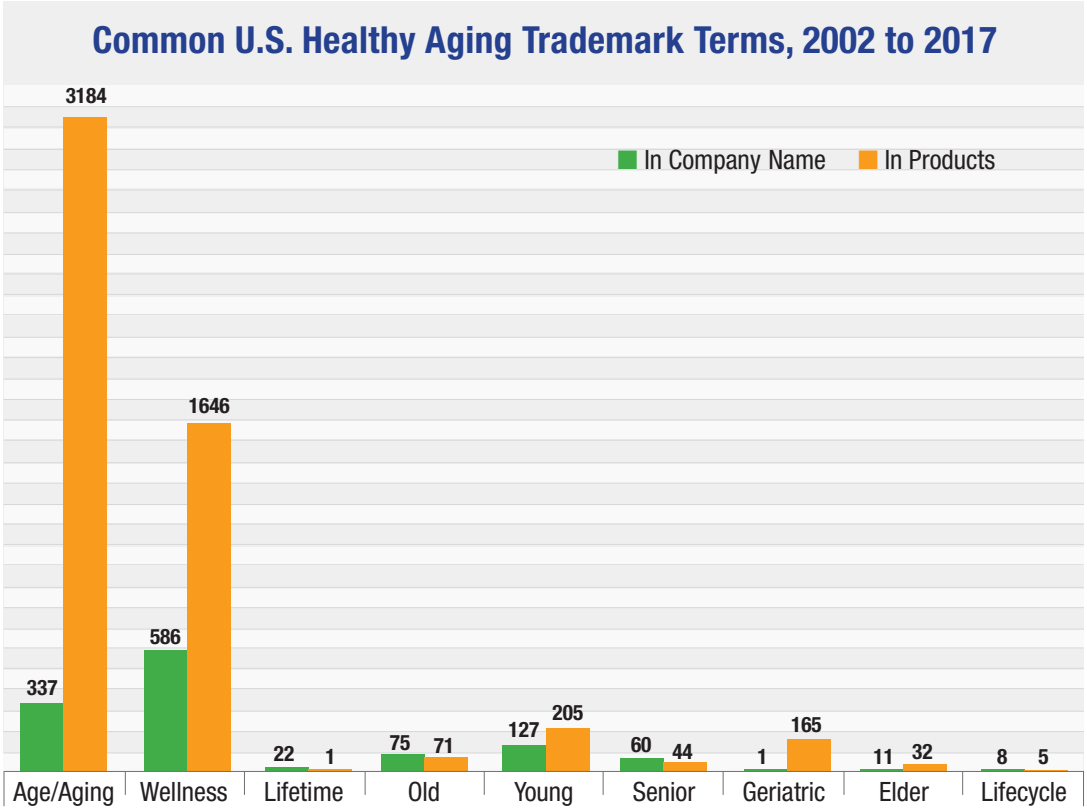
Patent Filing Trends

The number of patent applications directed to healthy aging innovations has been relatively consistent since 2001, averaging about 130 applications per year. However, it appears application filing peaked in 2012 is on a downward trend if 2016 is an indicator of the future. The 18-month delay before patent applications are published causes a lag in analyzed market trends from patent filings.

Patent Applications by Year



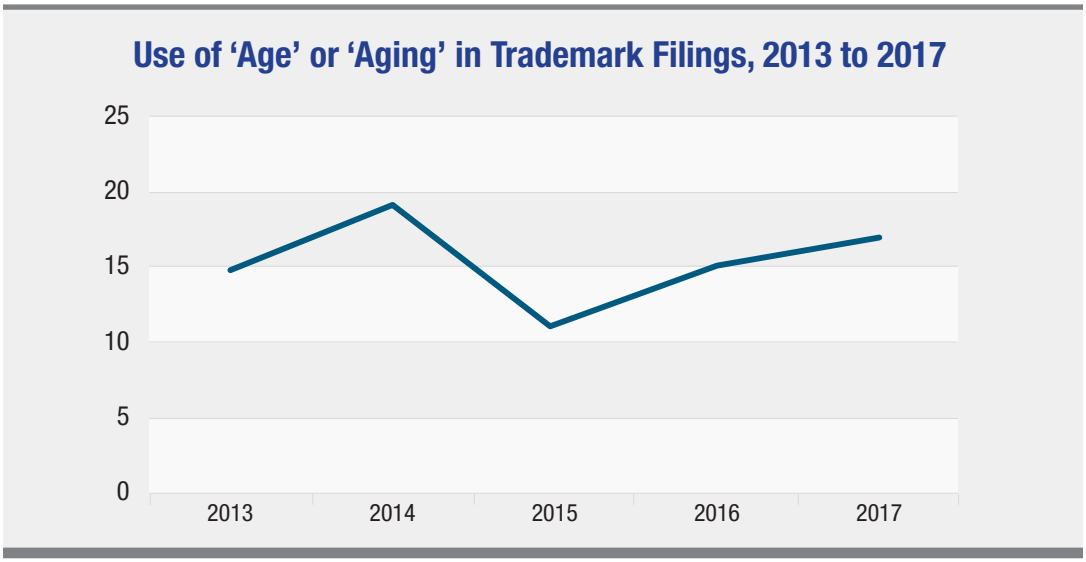
Products that are related to healthy aging must convey to consumers that they can help meet the challenges associated with getting older. Brand owners also might wish to imply to their customers that the products will help people feel younger.



These terms appear in trademarks that were filed for dietary supplements and other related products. Trademark applications also include a description of the goods associated with the mark. These goods are a limitation on trademark rights, as a trademark owner only has the right to exclude others from using a trademarked term with these specific goods. The term "wellness" appears in the goods nearly three times more often than in the company name. The term "age" or "aging" appears almost 10 times more.

The term "wellness" appears in the goods nearly three times more often than in the company name. The term "age" or "aging" appears almost 10 times.

The terms “age” or “aging” are clear indications a product is related to healthy aging. Successfully registered trademarks have included these terms along with less descriptive terms. The less descriptive terms such as “quencher,” “response” and “optimal” can convey products are anti-aging products if the consumer uses some thought or imagination.

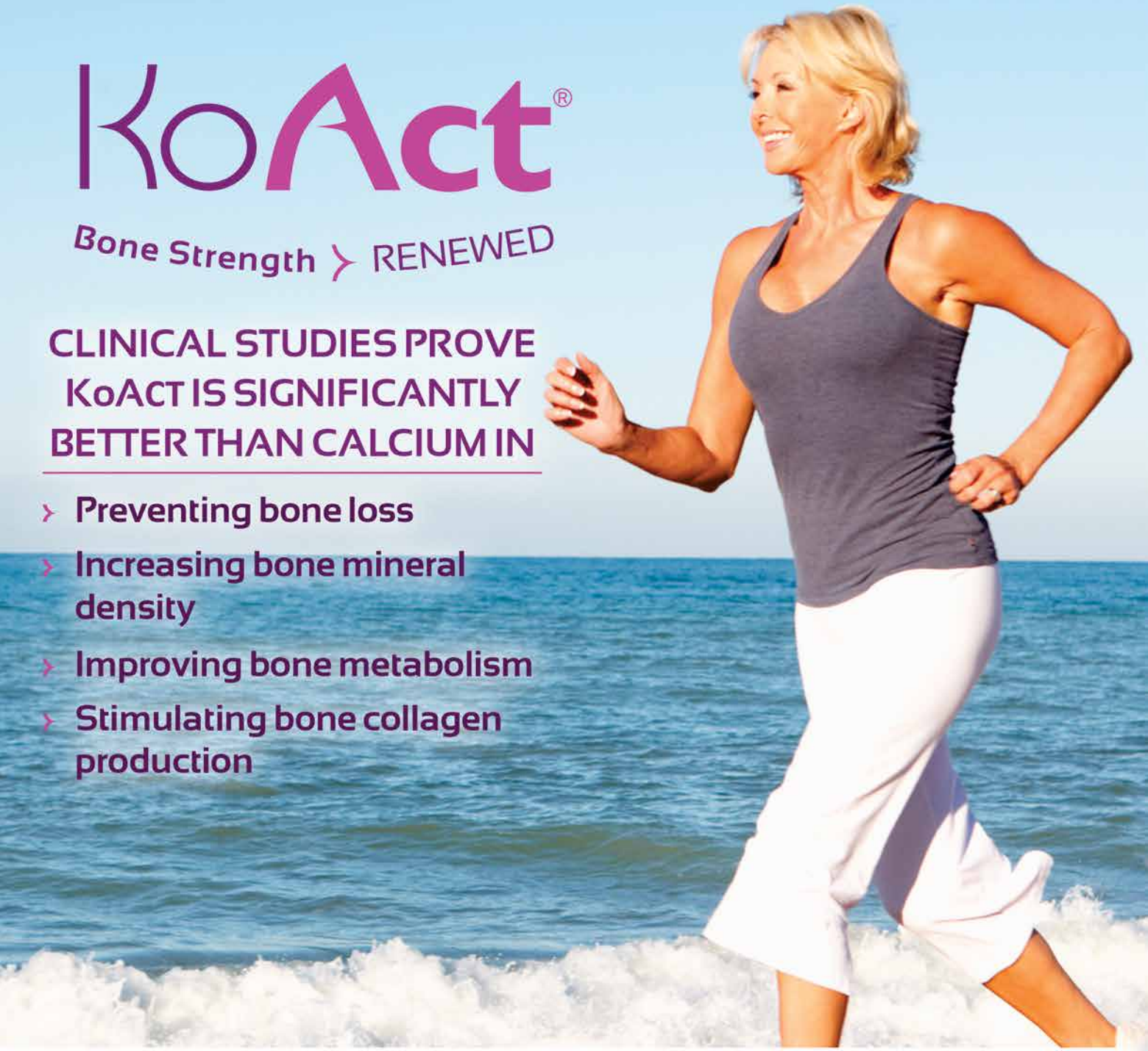


During the last five years, the terms “age” or “aging” have been used 77 times. In each of the three previous five-year periods, the terms have been used no more than 90 times and no less than 59 times. This indicates a consistent trend. Brand owners have realized the value of these terms in conveying their products will help meet the needs of aging consumers.

Attorney Andreas Baltatzis is a director at KramerAmado PC (krameramado.com), a boutique law firm specializing in intellectual property (IP). He represents a number of innovative nutritional supplement and nutraceutical companies that improve people’s lives every day. Baltatzis also helps companies prepare and implement IP strategies by obtaining patents and trademarks that protect their innovations and cash flow, as well as advising clients on successfully launching new products and brands.

Gideon Eckhouse is a senior associate at KramerAmado, with more than 10 years of experience in patents and trademarks. He assists innovative nutritional supplement and nutraceutical companies in protecting their IP throughout the world. Eckhouse counsels and implements global trademark strategies for new brand launches. Additionally, he prepares and prosecutes patent portfolios protecting new products coming to market.

STRENGTH AND FLEXIBILITY: THE KEY TO HEALTHY AGING



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Aging in the Regulatory Environment

by Jim Lassiter

INSIDER's Take

- Aging is a natural process that all face; it is not a disease, yet in FDA's thinking, products that talk about addressing the aging process are making disease claims.
- In the past few years, FDA clarified its stance on inflammation claims, noting that unless it's tied to an acute situation, it will be treated as a disease.
- Brands can market a product's benefits to bodily structures that reduce in efficiency with age, if substantiation exists to support claims.

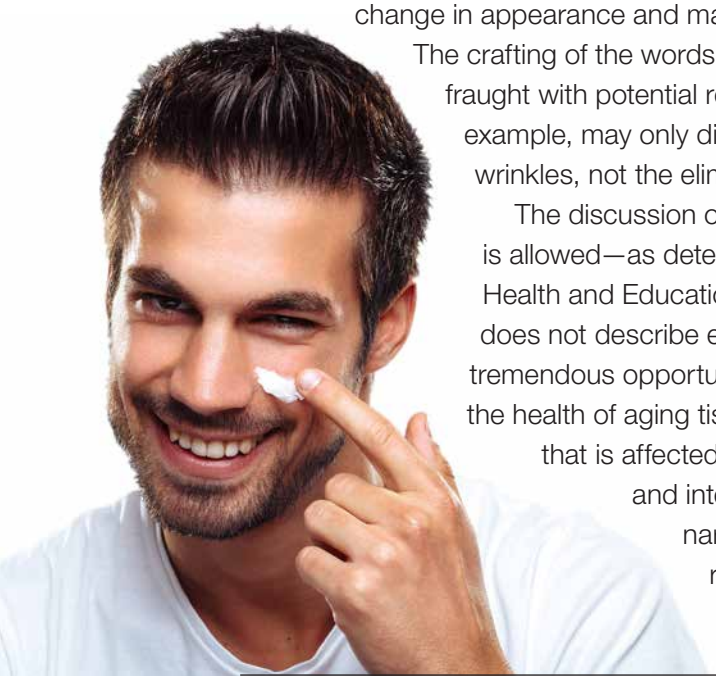
"Age is inevitable. Aging isn't."

— Marv Levy, former American and Canadian football coach

Unfortunately, such is not the case. At least not physiologically. The simple facts are that with each passing minute, we are all aging in a physiological sense. This physiological fact of life is something that is a natural process. As we age, everyone faces natural physiological consequences. The aging process tends to accelerate as we get older. Products that benefit people physiologically (at the structure/function level, at least) address this natural process.

Aging effects are as natural as can be. Except, of course, for a regulatory agency. Certain natural consequences of aging are considered the same as influenza or malaria. Aging becomes a disease.

This affects claims natural product brands can make concerning their products. The anti-aging product category is expanding with increasing demand for assistance with the travel through time. In the cosmetic area, the "treatments" offered may only discuss a change in appearance and may not make mention of a physiological change. The crafting of the words for these claims is therefore challenging and fraught with potential regulatory land mines. Anti-wrinkle creams, for example, may only discuss improvement in the appearance of wrinkles, not the elimination of them on any sort of permanent basis.



The discussion of the physiological effects of dietary supplements is allowed—as determined originally by the Dietary Supplement Health and Education Act of 1994 (DSHEA)—so long as the claim does not describe effects on disease. This would appear to be a tremendous opportunity to discuss the benefits of these products on the health of aging tissues and systems within the human physiology that is affected by this natural process. However, the flexibility and interpretive powers of FDA concerning these claims narrows the field significantly. Discussion of anything remotely related to prostate health, apart from a general statement of nutritional support, is

IN THIS ISSUE Intellectual Property p.35 Takeaways p.43 Table of Contents p.2

distinctly out of bounds. This is despite the evidence that an enlarging prostate is a natural consequence of aging.

That determination, made during the rulemaking process regarding structure/function claims, became the first notation that aging might be considered a disease by FDA. Substantiation is the first item that must be covered. Let's assume (and this is a huge assumption) that substantiation for a claim exists. FDA may not accept claims of the product's benefits if the agency believes it describes an effect on a disease rather than slowing down the natural aging process.

FDA may not accept claims of the product's benefits if the agency believes it describes an effect on a disease rather than slowing down the natural aging process.

An excellent example of this is osteoarthritis (OA). OA is not same as rheumatoid arthritis (RA) or psoriatic arthritis as discussed in drug advertising. The argument may be made that OA irritation and inflammation is the result of walking up-right. The aging process and continual motion wears out connective tissues, which do not lubricate as well as they used to. Yet, products and ingredients that help slow this process aren't allowed to make those claims. The discussion of inflammation is completely out as interpreted by FDA a few years back, despite earlier "thinking" that said otherwise. Discussion of the benefits of these products in the support of structures is where claims must remain. These structures age right along with the rest of our beings and describing the benefits with clarity is where the claims' gold resides. That is, of course, assuming substantiation exists for the claims being made.

Those structures that change with age (yes, even the enlarging prostate) are targets for not only products, but claims that may be made. Provided the substantiation exists for the claim regarding benefits to these structures, the claims are allowable and can convey important information. These structures' relationship to anti-aging is clear and should also be displayed prominently.

As chief operating officer, Jim Lassiter oversees all consulting operations at Ingredient Identity. He has more than four decades of experience in quality control (QC), and government and regulatory affairs throughout the pharmaceutical, dietary supplement and natural product industries with organizations such as Nutrilite, Robinson Pharma, Irwin Naturals, Chromadex, the American Herbal Products Association (AHPA) and the Council for Responsible Nutrition (CRN). A respected author and speaker, Lassiter has served on numerous industry and trade boards.

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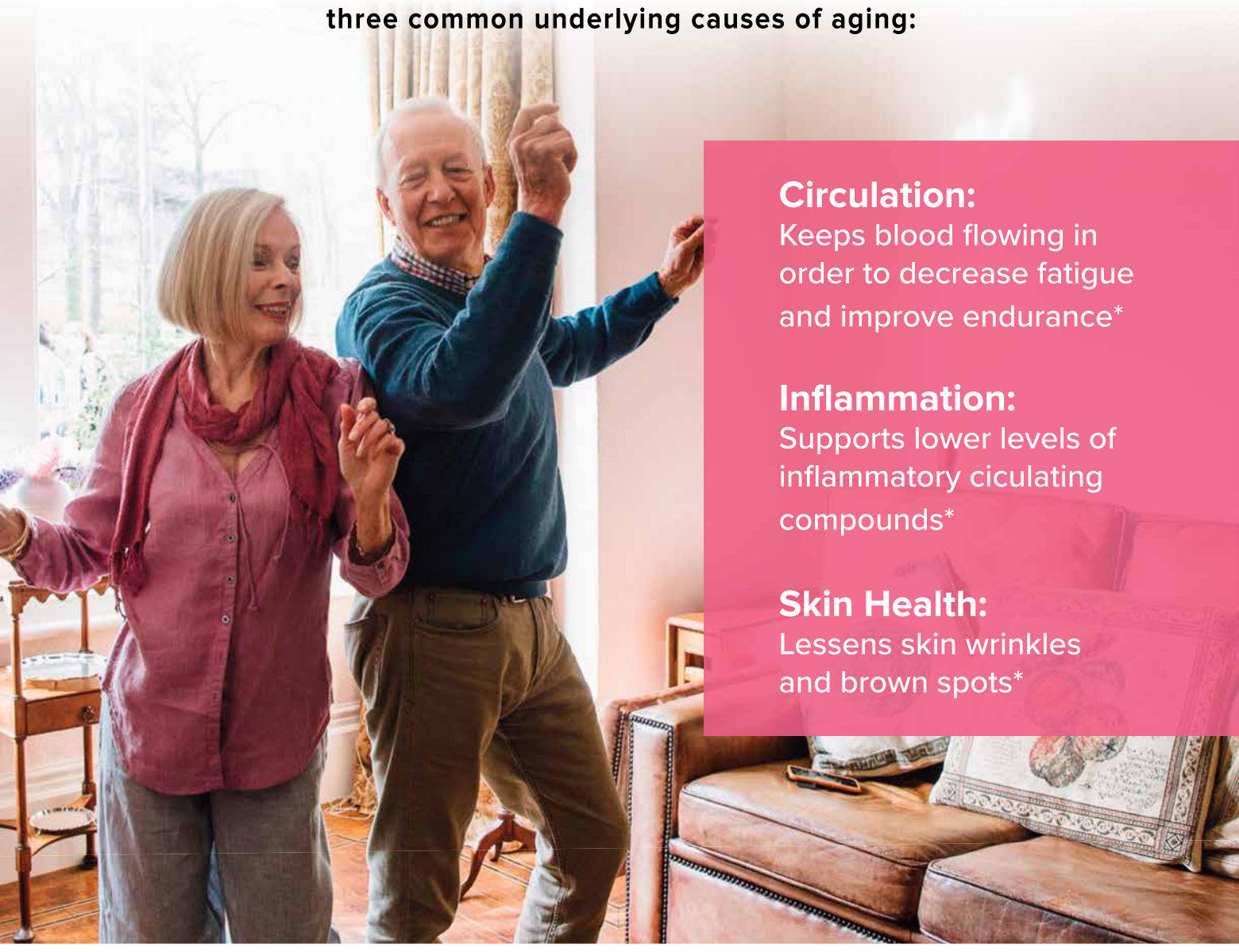

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Takeaways: The Changing Dynamics of Aging

by Rachel Adams

There's no doubt about it—products to support healthy aging are, and will continue to be, in high demand. Globally, the United Nations predicted one in six people globally will be over age 60 by 2030, compared to one in eight people over age 60 in 2015. To become or remain successful in the healthy aging category, consider these market dynamics:

Aim appropriately. The focus will increasingly zero in on "healthy aging," not anti-aging and certainly not care for old, woeful bodies. Seniors plan on working longer and staying active as they age, and they want natural products to help. Products should support active lifestyles while meeting the unique needs of aging consumers.

Keep in mind seniors are no longer the only category seeking products to support healthy aging. Millennials are an educated, health-focused group of consumers already thinking about how to preserve their bodies and remain functioning at optimal capacity as the years pass.

Think global. The United Nations' 2015 "World Population Ageing" report predicted fastest growth of the population of seniors is expected to take place in Latin America and the Caribbean with a projected 71 percent increase by 2030, followed by Asia, Africa, Oceania, North America and Europe.

Logistics still matter. Sure, seniors don't plan on getting old. But that doesn't mean they won't. Make sure labels are appropriately designed, packaging can be opened and closed easily, and consider formats that are easy to incorporate into an active lifestyle, such as functional foods and beverages.

In the coming year, popularity around genetic testing and health personalization will continue to grow, especially among younger consumers. Products focused on personalization, especially those based on genetic testing results, need to help consumers understand the role of nutritional solutions for genetic predispositions to ensure longevity of this market segment.

Looking to skin care—still a key category for healthy aging—high demand for cosmetics and effective topical solutions will drive interest in ingestible solutions. Large cosmetics retailers such as Sephora have added supplements to in-store offerings, while YouTube beauty gurus, who are leading influencers of cosmetics and beauty trends, are promoting nutritional solutions. In fact, leading beauty YouTuber Tati Westbrook—who has nearly 4 million subscribers and 1 million views per video—launched her own supplements line, Halo Beauty, earlier this year.

Brands offering finished products targeted at the aging process need to remember no one wants to be called "old," that the market is open to most age demographics, and the right technology appeals to everyone looking to remain healthy and fit for a lifetime.

IN THIS ISSUE Regulatory Insights p.40 INSIDER Contacts p.45 Table of Contents p.2

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