

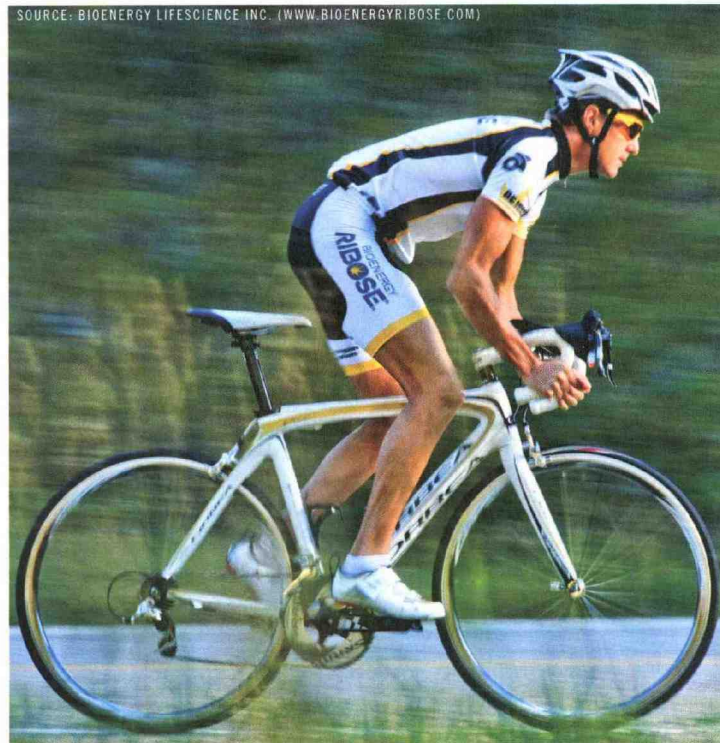
Stuart Cantor, PhD, Contributing Editor

# The Age of Man

Whether it's minerals like zinc or magnesium, vitamins D and K, or special nutrients—such as lycopene and saw palmetto—the XY demographic merits special attention, too.

**THERE ARE MEN** who play the roles of weekend warriors, sports enthusiasts and sometimes even armchair quarterbacks, and all are looking for great-tasting, effective nutritional foods, beverages and other products. Whichever way one looks at it, healthier men live longer and have more productive lives.

The overall market for sports and performance nutrition products has grown exponentially. While hardcore athletes and body builders remain a



## KEYPOINTS

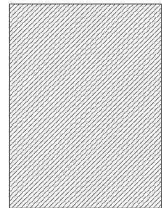
1. The combined sales of products in the sports nutrition supplement, sports bar and energy drink categories—with men as the primary target—is now around \$25 billion annually.
2. There are a number of nutritional ingredients that can help stave off cognitive impairment and decline.
3. An important aspect of men's health is the hormone testosterone. While testosterone peaks during adolescence and early adulthood, levels gradually decline about 1% per year after age 30.
4. Erectile dysfunction is most often caused by atherosclerosis—the same process that causes heart attacks and strokes.
5. Men are recognizing that high doses of sugar and caffeine—when the energy “gas tank” is empty and running on fumes—is no longer the way to go. They are looking for new paradigms and healthier energy options.

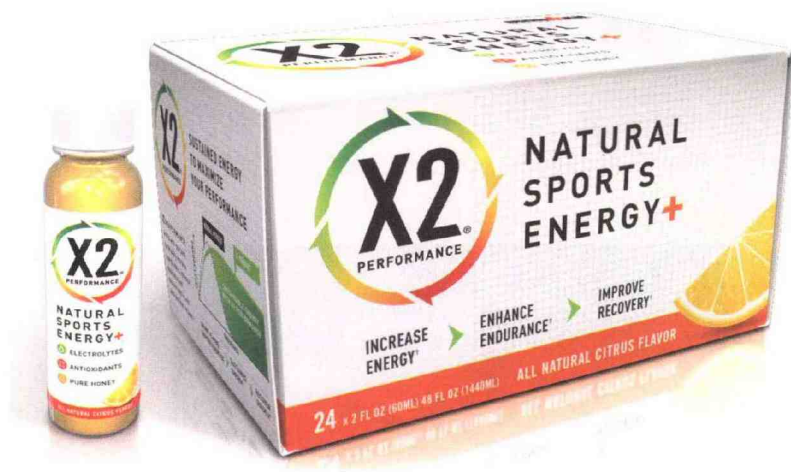
lucrative segment, a new, less intense—but far more populous—mainstream market has taken shape. This new segment has driven sports nutrition sales growth exponentially over the past few years. It is composed of recreational sports participants, casual athletes, gym exercisers, workhorses who have no time to exercise, and some 76 million Baby Boomer and Gen-Xer guys wanting to age gracefully.

According to WebMD, the public health information services website,

the top health concerns for men are: 1) cardiovascular disease from atherosclerosis or hardening of the arteries. (Note: Heart disease develops from a variety of lifestyle factors, including high serum cholesterol); 2) stroke; 3) prostate cancer—this most common cancer in men, after skin cancer, afflicts approximately 200,000 men in the US every year; 4) depression; 5) diabetes (especially type 2); and 6) erectile dysfunction.

Diabetes is perhaps the most critical, as it is for most Americans today.





Sports nutrition supplements, sports bars and energy drinks—typically targeting male consumers—rack up about \$25 billion in annual sales.

However, diabetes also is one of the most preventable when it is related to overweight/obesity. Multiple studies have demonstrated that moderate weight loss for those who are overweight—coupled with 30 minutes per day of physical activity—reduces the chance of diabetes by more than 50% in men at high risk.

segment most likely to be trying to lose weight. The survey also determined that those 65 and older were most likely trying to maintain their weight.

**By the Numbers**

“In a recent poll comparing viewpoints of Baby Boomers vs. their Generation-X counterparts, Boomers felt that

The top health concerns for men are cardiovascular disease, stroke, prostate cancer, depression, diabetes (especially type 2) and erectile dysfunction.

Experts at consumer research group Packaged Facts Inc. noted in a 2013 report that its surveys revealed Boomers aged 45-64 were the demographic

they are ‘taking more responsibility for their overall health’ now as compared with 10 years ago,” says Maryellen Molyneaux, president and managing

partner at the Natural Marketing Institute (NMI), a strategic consulting and market research group. “Another survey showed that the most popular dietary supplements consumed by men across the board are multivitamins, fish oil, and vitamins D and C.”

According to a combination of sales data sources, in 2012, the combined consumer sales of products in the sports nutrition supplement, sports bar, and energy drink categories passed the \$24 billion mark. Sales of powdered sports nutrition supplements designed for including in smoothies, shakes and beverages are expected to hit nearly \$5 billion by the close of this year. Just the single category of sports drinks by itself is predicted to ring up half a billion in sales in 2015.

“Men are still hesitant to check with their physician or healthcare provider about healthcare concerns, and men don’t typically show a strong interest in trying out new products,” states Lauren Clardy, managing director of NMI. “Millennials and ‘metrosexuals’ reach out sooner for advice and assistance with their healthcare needs and also have fewer issues with disclosure than aging Boomers.

Unfortunately, Boomers are the ones who have more health concerns. “Men’s personal care is trending based on the maxim, ‘we all want to look and feel younger,’ and certainly the demographics of Millennials and metrosexuals embrace the ‘nutritopicals’ and ‘nutricosmetic’ trends more readily,” explains Clardy. “This is evidenced by targeted men’s personal care skin care regimens launching into the market, as well as ‘beauty-from-within’ products hitting the retail shelves with a male focus.”

Clardy cites as an example the Nutrawise Inc. “youthery” line of dietary supplements, a recently launched





**Ribose, a versatile sugar slightly less sweet than table sugar, has been shown to help increase energy reserves by an average of 61% after only a few weeks of use.**

line of hydrolyzed collagen-based tablets and protein shake products. The youthery products are specially formulated for, and targeted toward, male consumers. The Anti-Aging protein shake mix contains 20g of high-quality protein derived from both collagen and whey proteins in a 50-50 blend. This protein blend is presented as being specially formulated to “help fight the effects of aging and to provide an array of functional and nutritional benefits, including hair rejuvenation.”

The youthery Revive daily dietary supplement, developed to provide a “naturally smooth energy boost,” claims to “help to restore muscles faster” and “support and protect digestive system health.” It includes cayenne, caffeine from black and great tea extracts, aloe vera and African mango extract. Its goal is to help keep men’s bodies “balanced

no matter how hard they are pushed.”

Another specially formulated collagen product was launched recently to “help maintain healthy joints, restore cartilage and joint function, and also provide cardiovascular support.” It contains turmeric and *Boswellia serrata* extracts, plus the antioxidant quercetin.

“As we get older, our body doesn’t produce collagen the way that it used to when we were in our teens,” says Nutrawise CEO Darren Rude. “The new line helps give men the additional collagen they need to help promote healthy aging, support bone health and rejuvenate hair,” concludes Rude.

**Brogurt Hits the Market**

Greek yogurt recently took America by storm. Several years ago, Greek yogurt only accounted for 4% sales of the total yogurt market. Now that number hov-

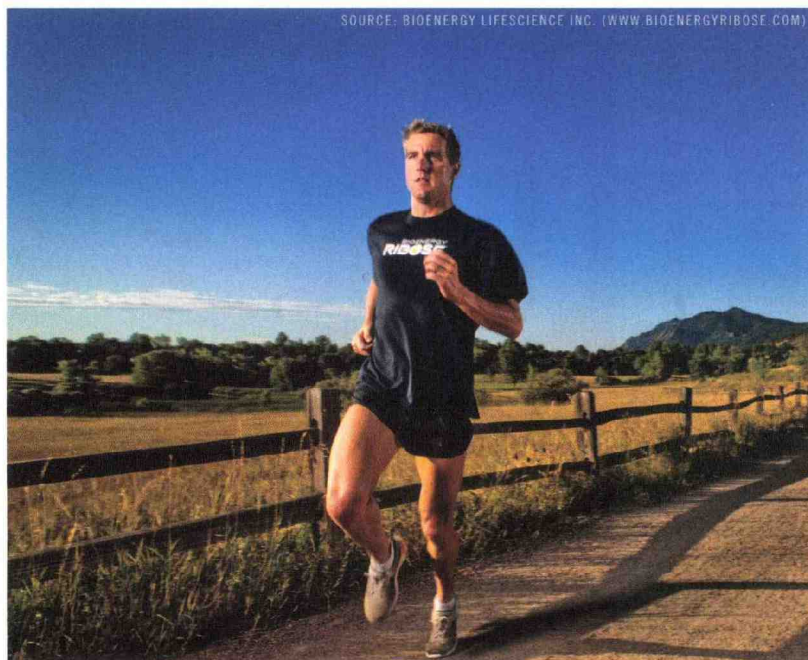
ers above 35%—according to research firm Bernstein Research—and Americans just can’t seem to get enough of it. Retail sales of yogurt in the US will land at about \$9.3 billion by 2017, up from \$7.3 billion in 2012, according to a report by the NPD Group.

Yogurt has typically been a “woman’s product.” Last year, the Dairy Management Institute reported on research group IRI’s data showing that while 83% of all US households bought at least some form of yogurt throughout 2012, adult males accounted for only a quarter of yogurt consumption. Women were more than twice that figure, at 52%, with the rest consumed by kids and teens.

Yet yogurt and other cultured products—specifically those replete with active probiotic cultures—has health benefits men need and might not get from any other source. One company that saw this unmet need for guys, Powerful Men LLC, recently entered the rapidly growing market with its Powerful Yogurt, launched in 2013.

“We took an inventory of the products available on the market that appealed to active men and saw a huge opportunity for high-protein products that taste great; are truly all-natural; and that fuel an active lifestyle,” says Carlos Ramirez, Powerful founder and CEO.

The gamble appears to have paid off with solid success. In marketing its product lines to men, the company benefited further when media pundits dubbed the products “brogurt.” One of the main points of appeal, especially to male athletes, is the high protein content with 21-25g protein per 8oz serving. Typical yogurts contain 5g of protein per serving size. (Powerful’s newly launched yogurt drinks contain 20g per 12oz serving).



**Top health concerns for men are cardiovascular disease, stroke, prostate cancer, depression and diabetes.**

In addition to high protein, many of the company's yogurt offerings are fat-free, and all use non-GMO, all-natural ingredients. They also contain seven live and active probiotic cultures. The company likewise launched a line of active

yogurt-coated protein bars. They come in Chocolate Coconut, Peanut Butter and Jelly, and Vanilla Maple flavors. Each 50g bar contains 40% (20g) protein.

Powerful yogurt bars also contain *Bacillus coagulans*, a special type of

probiotic bacteria that not only supports digestive and immune health, but is highly stable due to its ability to form a protective spore. This allows it to not only survive the stresses of processing, but also the high-acid environment of the stomach, allowing more of the probiotic bacteria to enter the digestive system in a viable state.

This probiotic can even survive the low-pH environment of the stomach. Other product lines include yogurt made with whole grains (quinoa, chia seeds or oats) and also yogurt drinks containing 20g of protein and formulated for optimal pre- and post-workout nutrition.

### Man Think

Today, there are more than 2 million men estimated to be living with Alzheimer's disease, according to the Alzheimer's Association. The total national cost of caring for people with Alzheimer's and other dementias is projected to reach \$214 billion.

Fortunately, aside from keeping the mind active in youth, there also are a number of nutritional ingredients that can help stave off cognitive impairment



**With yogurt traditionally a “woman’s” product, the importance of probiotics to health left men in the dust—until high-protein/high-active culture yogurt and yogurt products came onto the scene.**

and decline while playing endless rounds of golf in the golden years.

The role of magnesium in memory and cognitive function has long been suggested, but never supported, until recently. Research from four published studies reveals that a novel magnesium compound—magnesium L-threonate—is able to pass through the blood-brain barrier more effectively than other forms of magnesium. Improved brain function is closely associated with the increased synaptic connections in the sub-regions of the brain’s hippocampus. These connections are known to control memory.

The clinical research to date has shown a greater brain synapse density in subjects taking magnesium L-threonate. Magnesium L-threonate is suitable for both the nutraceutical market and the food/beverage channel. It has a clean taste, is odorless, highly soluble and holds self-affirmed GRAS status.

Vitamin B<sub>6</sub>, which occurs in three chemical forms called pyridoxal, pyridoxamine and pyridoxine, can be found in a wide variety of foods, including beans, meat, fish, fortified cereals, some fruits and vegetables, and poultry. Older men need slightly more of this water-soluble vitamin than older women do. Men aged 19-50 should make sure to get at least 1.3mg of B<sub>6</sub> per day, and men over 50 should get at least 1.7mg per day.

According to the Linus Pauling Institute, younger American men consume an average of 2mg per day of vitamin B<sub>6</sub>, which meets the recommended daily intake. However, surveys have found that

elderly men consume an average of only 1.2mg per day of the vitamin, an amount that does not meet the recommended daily intake. Studies of immune system and cognitive disorders have shown that





**Lycopene, a red carotenoid particularly concentrated in tomatoes, inhibits testosterone receptor expression in prostate cancer cells and helps reduce prostate cancer cell proliferation.**

this lack of vitamin B<sub>6</sub> might be affecting the health of this demographic.

The amino-acid derivative phosphatidylserine (PS) is found in high amounts in the brain and plays a key role in the ability of brain cell membranes to respond to neurotransmitters. PS is used in infant formula in Asia to help developing brains, but it also has received some interest as a potential treatment for Alzheimer's disease and other memory problems. PS typically is manufactured from soy or sunflower lecithin, or from cabbage derivatives.

A standard dose of PS is 100mg, taken three times a day, to total 300mg daily. This dose seems to be effective as a daily preventative against cognitive decline, although as little as 100mg once daily could provide some degree of benefit.

While several studies of PS have indicated improved cognitive abilities and behaviors, improvements lasted only a few months and were seen in people with the least severe symptoms. Thus, more carefully controlled

clinical studies with larger patient populations are warranted to better understand the health benefits of PS supplementation.

### What Goes Down

Another important aspect of men's health is the hormone testosterone. While testosterone peaks during adolescence and early adulthood, levels gradually decline about 1% per year after age 30. In addition to improving sexual function and bone-mineral density, testosterone also increases muscle mass and strength, and has been shown to improve lipid profiles and insulin resistance.

Erectile dysfunction (ED) might not be life-threatening, but it signals an important health problem. Two thirds of men over 70, and up to 39% of men between 40-70 years old, have claimed to have problems with erectile dysfunction. It also is no surprise that men with ED report less enjoyment in life and are more likely to be depressed.

Erectile dysfunction is most often caused by atherosclerosis—the same process that

causes heart attacks and strokes. In fact, having ED frequently means blood vessels throughout the body are in a state of declining health. Doctors consider erectile dysfunction an early warning sign for cardiovascular disease.

The “magic blue pill” that revolutionized men’s sexual health is well-known enough to have kept hundreds of late-night talk show hosts and stand-up comics on the gravy train for more than 15 years now. According to experts at the consulting group IMS Health Inc., 8 million prescriptions for Viagra (*Sildenafil citrate*) alone were written in

2012, to the tune of more than \$2 billion. Cialis, Levitra and other ED-fixing pharmaceuticals provided stiff competition, racking up hundreds of millions more in sales each.

Lately, there has been much controversy over whether testosterone therapy causes heart attacks. In this latest saga over the safety of testosterone treatment, researchers have recently reported no significant increase in myocardial infarction or heart-attack risk in older men treated with an intramuscular form of the therapy. The study, published online in the

*Annals of Pharmacotherapy*, compared 6,355 Medicare beneficiaries treated with testosterone with 19,065 who were not, between January 1997 and December 2005.

There are several nutraceuticals that can be used to enhance male sexual health. An extract of the aptly named horny goat weed is favored as a natural product of certain plants in the *Epimedium* genus, which includes *Epimedium grandiflorum* and *Epimedium sagittatum*. Both have a history of use in Eastern medicine to relieve fatigue and weakness in the back and knees.

## Healthy Energy vs. Energy Loan Sharks

Men are facing the “perfect storm” for a human energy crisis. They have gone from an average of 9 hours sleep per night 140 years ago (before light bulbs were invented) to 6¾ hours or less. The speed and stress of modern life is increasing; the nutrient density of the diet is decreasing.

With most adults wishing they had more energy, and 31% suffering from severe chronic fatigue, this epidemic is increasing with alarming speed. At the same time, the public is becoming increasingly aware of the downsides of the energy “loan sharks” they have been reaching for—excess sugar and caffeine.

Combined with poorly processed junk foods that are calorie-rich but nutrient-poor, for the first time in human history, there is a huge increase in people who are at once obese and malnourished.

Where caffeine in moderation—e.g., one to three cups of tea or coffee a day—has actually been shown to have health benefits, the role of excess sugar in causing a wide array of health problems is increasingly publicized, and the public is becoming more educated about looking for healthy alternatives.

Men are recognizing that “slamming down on the gas pedal” with high doses of sugar and caffeine when the energy “gas tank” is empty and running on fumes, is no longer the way to go. They are looking for new paradigms and healthier energy options.

More energy typically means more energy foods, but several key areas must be considered when developing these. “Energy” historically meant calories, but research is increasing recognition of the role micronutrients play in providing energy. As much as half of micronutrients, vitamins and minerals can be lost during food processing. Two key micronutrients for energy are B vitamins and magnesium.

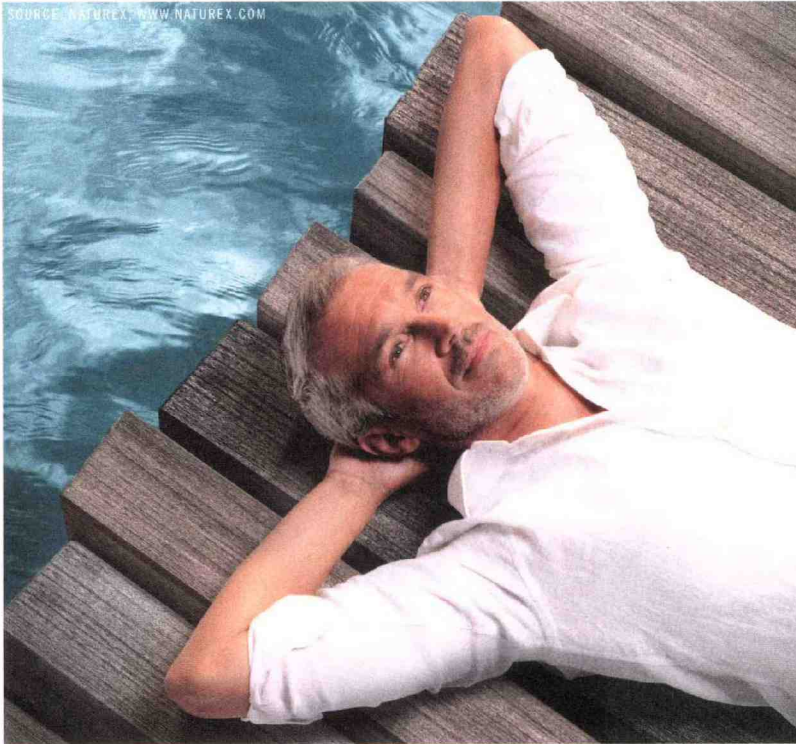
To convert calories into usable energy (as opposed to fat when energy production is working poorly), the body uses energy molecules, such as its primary “charging” molecule, adenosine triphosphate (ATP); a form of vitamin B<sub>2</sub> called flavin adenine dinucleotide; and nicotinamide, a form of vitamin B<sub>3</sub>. These are like rechargeable batteries and are made of phosphates, adenine, B vitamins and ribose.

The latter is especially important and is a key rate-limiting factor for making healthy energy. Energy molecules recharge billions of times in 24 hours, and the body can recharge its own weight in these molecules every day. During an energy crisis, the body is not able to normally recharge these cellular batteries. In an emergency move, the body can take two drained ATP molecules (called ADP) and fuse them together to make one ATP and a completely drained battery, AMP. Creating ribose—the key component needed to make new ATPs—is a slow and laborious process for the body, so energy production loses efficiency.

Ribose, studied in persons with the most severe of “energy crisis,” has resulted in energy increases by an average of 61% after three weeks. It suggests that supplemental ribose contributes to restoring the body’s own ability to make energy efficiently.

*Jacob Teitelbaum, MD, is director of the Practitioners Alliance Network (PAN) and author of From Fatigued to Fantastic!; Pain Free 1-2-3—A Proven Program for Eliminating Chronic Pain Now; the Beat Sugar Addiction NOW! series; Real Cause, Real Cure; the e-books Three Steps to Happiness and The Fatigue and Fibromyalgia Solution; and the popular, free smartphone app “Cures A-Z.” He is the lead author of four studies on effective treatment for fibromyalgia and Chronic Fatigue Syndrome, as well as a study on effective treatment of autism using Nambudripad’s Allergy Elimination Techniques (NAET). For more information, visit his website at [www.EndFatigue.com](http://www.EndFatigue.com).*





There are several ingredients known for maintaining prostate health. These include lycopene, saw palmetto, cranberry juice and/or extract, extracts of stinging nettle (*Urtica dioica*) and *Prunus africanum*, the red stinkwood tree, commonly known as Pygeum.

This weed supposedly earned its name after a shepherd noted increased sexual behavior in goats that had eaten it.

There's science behind the goat weed lore. The main active molecule in horny goat weed extract is icariin. Icariin inhibits the activity of the protein phosphodiesterase type 5—engaging the same mechanism of action used by sildenafil [Sildenafil citrate, sold as Viagra] to increase male sexual stimulation.

**More Below the Belt**

Previous research has also shown that sperm quality and function improves with use of the carotenoid astaxanthin. Astaxanthin is a potent antioxidant—in fact, in terms of antioxidant potency, astaxanthin is 550 times stronger than

the tocopherol form of vitamin E and 6,000 times stronger than vitamin C.

Double-blind trials also showed that astaxanthin supplementation in men increased conception rates based on its ability to enhance sperm capacitation while ameliorating damage.

In “The role of food supplements in the treatment of the infertile man,” published in 2003 in the journal *Reproductive Biomedicine Online*, authors Frank Comhaire, PhD, and Ali Mahmoud, PhD, of the Centre for Medical and Urological Andrology, Ghent University, Belgium, found that “sperm quality and function improved with the intake of complementary food supplementation using a combination of zinc and folic acid, or the antioxidant astax-

anthin” or “an energy-providing combination containing (actyl)-carnitine (ProXeed, [a branded male infertility product].)” The authors added that “double blind trials showed that the latter two substances increase spontaneous or intrauterine insemination- (IUI-) assisted conception rates.”

Comhaire and Mahmoud also noted that, “Extracts of *Pinus maritima* bark (Pycnogenol [a patented extract of maritime pine bark]), which inhibits the cyclo-oxygenase enzyme, reduce prostaglandin production and inflammatory reaction,” and “extracts of the Peruvian plant *Lepidium meyenii* were shown to improve sperm morphology and concentration, respectively, in uncontrolled trials.”

Flaxseed oil, rich in the alpha-linolenic form of omega fatty acid and lignans, has been show to help ameliorate poor motility of sperm. According to Comhaire and Mahmoud, “Lignans are precursors of enterolacton, which inhibits aromatase and reduces the ratio of 16-OH over 2-OH estrogen metabolites. The resulting reduction in estrogen load may favorably influence Sertoli cell function.” Sertoli cells are the “nursery” for sperm in the testes.

There also are testosterone-boosting supplements, such as magnesium and zinc aspartate and zinc mono-L-methionine sulfate, which can address the concerns of aging men looking for improved vitality, and anabolic or muscle-building support.

**And More...**

The prostate is a small, muscular gland in the male reproductive system. The cause of benign prostatic hyperplasia (BPH) is still not fully known or understood. BPH occurs when the cells of the prostate gland begin to multiply. These additional





**In men, lignans have been shown to have positive effects on prostate health.**

cells swell the prostate gland, which squeezes the urethra and limits the flow of urine.

In some men, an enlarged prostate triggers a cascade of other uncomfortable lower urinary tract symptoms (LUTS), including a frequent and urgent need to urinate and nocturia (frequent urina-

tion at night). It is estimated that 50% of men show symptoms of BPH by age 50, and this increases to 75% in men over 80 years of age. In 40-50% of these patients, the symptoms become clinically significant and require treatment.

There are a number of key ingredients known for maintaining prostate health. These include lycopene, saw palmetto, cranberry juice and/or extract, extracts of stinging nettle (*Urtica dioica*) and *Prunus africana*, the red stinkwood tree, commonly known as Pygeum.

Lycopene is a powerful antioxidant that may help protect cells from damage. Lycopene is a natural, bright-red carotenoid pigment made by plants. It is found in a number of fruits and vegetables, including apricots, guava and watermelon, but the primary source of lycopene is tomato-based products.

Research has shown that the bioavailability of lycopene is greater in processed tomato products, such as tomato paste and tomato purée, than in raw tomatoes. Lycopene inhibits androgen (ex. testosterone) receptor expression in prostate cancer cells in vitro and, along with some of its metabolites, reduces prostate cancer cell proliferation and is believed to help modulate cell-cycle progression.

Saw palmetto extract is derived from the fruit of *Serenoa repens*. While it has a long history as a folk remedy for a number of condi-

tions, it has become most popular in recent years as a treatment for benign prostatic hyperplasia (BPH). Although controversy arose based on a 2009 review that found saw palmetto to be no better than a placebo,

later research indicated the extract can help with certain symptoms of BPH.

A November 2014 study found a combination of saw palmetto, lycopene and selenium was significantly effective for

certain BPH symptoms. Cranberry juice and/or extract has been shown to prevent urinary tract infections by preventing bacteria from adhering to the urethra walls and can help against bladder infections, as well.

Stinging nettle has a long medicinal history going back to medieval Europe. Researchers are still unsure of the mechanism of action that enables stinging nettles to have success against BPH and urinary tract problems. A 2013 study found that stinging nettle possessed compounds that can inhibit the enzyme *5-alpha reductase*. This enzyme converts testosterone into dihydrotestosterone (DHT), a potent androgen hormone associated with prostate enlargement, low testosterone levels in older men and hair loss.

Pygeum extract has been used in Europe to treat BPH since the 1960s. It contains a number of phytochemical compounds such as triterpenes, ferulic acid and phytosterols. Ferulic acid lowers cholesterol levels in the prostate (this has been shown to decrease cellular growth), and phytosterols block prostaglandin synthesis, leading to reduced pain and inflammation. Triterpenes also block enzymes responsible for the destruction of connective tissue, which can lead to possible improvements in symptoms of an enlarged prostate.

Whether it's minerals—like zinc or magnesium, or special nutrients, such as astaxanthin, lycopene and saw palmetto—the XY demographic merits special attention, too. There are a number of ingredients and products on the market that can help men of any age live long, happy and prosperous lives. **PF**

*Stuart Cantor, PhD, has written extensively for leading US and European food trade magazines. His expertise encompasses development of controlled-release tablets and capsules, as well as a variety of nutraceutical formulations and scale-up of products for healthy glucose management, weight loss and other health-related conditions. He can be reached at stubee2@gmail.com.*



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## A Fertile Topic

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Most fertility solutions are focused on women, but recent statistics point out that the father-to-be is an important factor in the process of getting pregnant. Male fertility statistics in the US indicate that men and women share the same percentage of responsibility for infertility—40% male, 40% females and 20% unknown.

Of all nutrients, zinc is likely the most crucial to male fertility. The mineral has been shown to increase testosterone levels, elevate sperm count and boost sperm motility. While dietary sources of zinc include foods such as oysters, shrimp, herring, meat and poultry, whole grains and seeds also are good sources. This is especially true of sesame and pumpkin seeds, lentils, peas and garbanzo beans, quinoa, cashews and other nuts.

These foods also are good sources of the antioxidant mineral selenium. Selenium is important for sperm development and protects against DNA damage. Among vegetarian foods, zinc and selenium are available in asparagus, broccoli, leafy greens like spinach and mushrooms, especially Shiitake mushrooms.

L-carnitine enhances sperm energy and motility. Important for healthy sperm, and recent studies indicate omega 3 fatty acids enhance sperm motility and help fertilization. It has been demonstrated that fertile men have higher levels of omega 3s in their blood and in the sperm. Both omega-3 and omega-6 acids are required for sperm production, as they are part of the sperm cell membrane, and are important for successful fertilization.

Moreover, since omega 3 is important for a balanced immune function, reduced levels are associated with compromised immunity, a condition also associated with diminished fertility in males. It is worth noting that increased omega-6/omega-3 ratio in sperm has been implicated in impaired semen quality (count, motility and morphology), adding to the host of physiological dysfunctions being recognized as attributable at least in part to this imbalance. Processors have an excellent opportunity to address these nutrient shortfalls

in an area that is of concern to a growing demographic of men.

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