Botanicals and Nutrients to Decrease BPH Symptoms and Optimize Prostate Health

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Discussion

The prostate, a small gland about the size of a walnut in healthy young men, is found just below the bladder and in front of the rectum. Prostate enlargement often occurs in men over age 40 and, at some point, more than half of these aging men develop benign prostatic hyperplasia (BPH) with symptoms and changes in the prostate tissue. Since it surrounds the urethra, a swollen prostate gland often causes urinary issues that vary with frequency and intensity. About one-third of men experience some urinary difficulties associated with BPH by age 50. By age 80, about 90% of all men experience some degree of BPH which is characterized by proliferation of smooth muscle and epithelial cells, causing enlargement of the prostate.[1]

Multiple shifts in prostate androgen metabolism are contributing factors to BPH. As men age androgen levels naturally decline, influencing the estrogen/androgen ratio in favor of estrogens along with other changes that vary by individual. Studies estimate that total testosterone levels begin to shift around age 45 to 50 years of age.[1]

High androgen concentrations in the prostate support its main function, which is secretion of fluids essential for reproduction. It is hypothesized that prostate tissue is adversely affected over time by these high concentration of androgens, especially by the powerful androgen 5-alpha-dihydrotestosterone (DHT).[2,3] While DHT helps support homeostasis between cell proliferation and cell death,[3] higher conversion of testosterone to DHT by 5-alpha-reductase in the prostate can result in increased cell proliferation.[1]

Many of the botanicals and natural compounds highlighted in this paper target the 5-alpha-reductase enzyme pathway, thus inhibiting over-production of DHT. At the same time, these plant extracts and nutrients work through several pathways to support optimal prostate function.

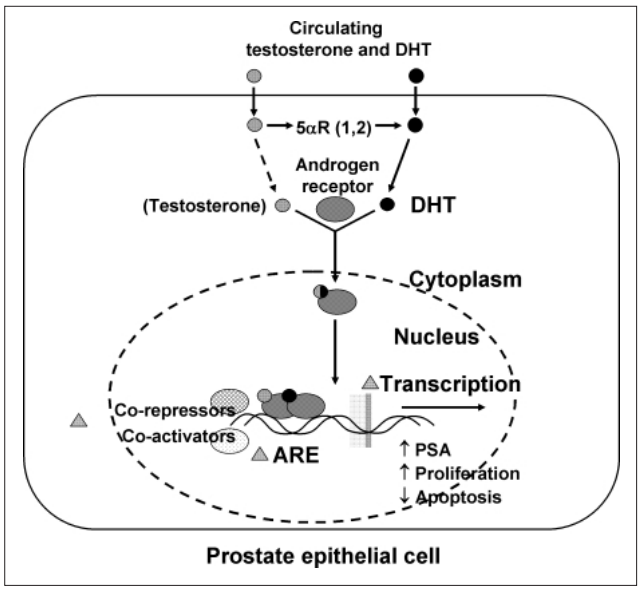
Synergistic Influence of Combined Nutrients and Botanicals

Many researchers report the significant benefits of botanicals for addressing BPH and its adjunct issues. They often find increased effectiveness and benefits from combining herbal and/or nutrient compounds together. Botanicals have been used in this manner for many years in modern Europe, where herbal medicines are routinely dispensed for BPH with numerous human studies and clinical trials supporting this use. In Italy, almost half the medications given for BPH are herbal. Germany and Austria use herbal therapy as a first line of treatment for mild-to-moderate genito-urinary symptoms and herbal medicine accounts for about 90% of medications prescribed for BPH treatment.[4]

Multiple studies show strong evidence for the efficacy of Saw Palmetto and other herbs. Some studies find Saw Palmetto combined with Selenium and Lycopene to be more effective than Saw Palmetto alone to reduce prostate inflammation, epidermal growth factor (EGF), vascular endothelial growth factor (VEGF), and oxidative stress along with prostate hyperplasia; offering significant relief from symptoms in those with chronic prostate conditions.[4]

The combination of Nettle Root and Pygeum showed significant improvement in urinary symptoms and decrease of overall symptoms in a study with 134 BPH subjects. The results were attributed to inhibition of the enzymes 5-alpha-reductase and aromatase. While Pygeum is recognized to significantly inhibit these enzymes and Nettle shows a weaker ability to inhibit these pathways, the combination was considered more effective than either alone.[1]

A study with 543 people over 48 weeks who took a combination of Saw Palmetto and Nettle Root for early stages of BPH found significant results in the decrease of symptoms and the increase of urinary flow.[1] Other studies find that combining botanicals such as Nettle Root and Pygeum with



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Saw Palmetto increases the benefits, including a significant decrease in nocturia.[5]

An animal study reports a combination of Saw Palmetto, Selenium and Lycopene to be more effective than Saw Palmetto alone. Together they show increased anti-inflammatory activity and greatly reduced VEGF and EGF expression.[6] This combination is found to be more effective than Saw Palmetto alone to reduce prostate hyperplasia and weight, promote apoptosis, and suppress EGF and VEGF in hyperplasic prostates.[3] A paper that reviewed some of the major and most recent findings on the therapeutic properties of three widely used compounds – Saw Palmetto, Lycopene, and Selenium – concluded that all three inhibit prostate cancer through the dual activity of inhibiting proliferation and inflammation within the prostate gland.[7]

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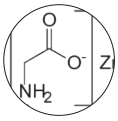
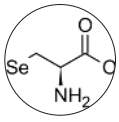


Zinc Glycinate Chelate

The mineral Zinc is essential for growth and reproduction in humans. Necessary to maintain the structural integrity of DNA, Zinc is integral in the synthesis of nucleic acid and protein. It also plays a role in cellular metabolism, immune function, and wound healing, and is essential for the activity of over 100 enzymes. Zinc acts as a messenger in signal transduction.[8-10]

Zinc plays a vital role in the nuclear binding of androgen receptors in the formation of hormone receptor proteins. It also influences steroid synthesis and the metabolism of nutrients.[10] The prostate contains the highest concentration of Zinc of any soft tissue. High amounts of Zinc are secreted in the prostatic fluid.

Studies find that Zinc concentrations in malignant prostate tissues are about 10% to 25% of those in normal prostate tissue. This suggests that Zinc homeostasis in the prostate is essential to prostate health, though the exact mechanisms are unclear. One theory proposes that dysregulation of Zinc transporters in the prostate can lead to disruption of Zinc homeostasis and contribute to formation of malignancies. Often low intracellular Zinc is found in human prostate cancer tissues or in prostate epithelial cancer cell lines.[11]



Selenium Amino Acid Chelate

Selenium, an essential trace mineral, is found in Brazil nuts, whole grains, fish, and sunflower seeds as selenomethionine, which is a Selenium analog of methionine that exerts antioxidant and anti-inflammatory influence. Selenium comprises a key component of selenoproteins such as glutathione peroxidase. As such, it exerts antioxidant properties and helps prevent formation of

free radicals. Since it reduces reactive oxygen metabolites, glutathione peroxidase helps maintain cell membrane integrity by preventing oxidative damage to lipids, lipoproteins, and DNA.[3,4;12-16]

Selenium inhibits lipid peroxidation and is found to decrease the binding of various chemical compounds to DNA. Over 25 selenoproteins are known to exist in human biochemistry throughout the body. As a cofactor in various metabolic pathways, Selenium can act to modulate cell signal transduction.[12-16] Some studies suggest that Selenium supplementation can slow prostate growth through its ability to inhibit cell proliferation and to stimulate apoptosis.[4]

Saw Palmetto (*Serenoa repens*)

Considered by Eclectic Physicians as a nutritive tonic, Saw Palmetto berries were used by Native Americans in the 18th century for testicular atrophy, erectile dysfunction, prostate gland swelling, as an aphrodisiac, and to improve sexual vigor. It was also traditionally used for urogenital tract infections.

Saw Palmetto berry contains fatty acids, plant sterols (including B-sitosterol), polysaccharides, flavonoids, carotenoids, and volatile oils. The plant sterols and fatty acids of Saw Palmetto berry are found to inhibit the 5-alpha-reductase enzyme that blocks the conversion of testosterone to di-hydro testosterone (DHT), which promotes prostate gland growth.

Saw Palmetto is thought to benefit prostate health through multiple mechanisms of action. It is found to block the activity of estrogen receptors in the prostate. It is a potent anti-inflammatory, exerts anti-proliferative influence, and stimulates apoptosis in prostate cells. Saw Palmetto influences the decrease of sex-hormone binding globulin (SHBG) and is found to inhibit proliferation of prostate cells induced by prolactin and growth-factors. It is also found to help reduce spasm of the bladder muscle.[1,2,4,17-21]

Saw Palmetto is considered the most widely used botanical for BPH. In numerous studies, compared with placebo, Saw Palmetto significantly improved urinary tract symptoms and flow, decreased nocturia, and alleviated BPH symptoms. Several studies also reported effective reduction of prostate size with administration of Saw Palmetto in addition to significant alleviation of BPH and urinary symptoms.[1,4,17-20] Improvement of symptoms was found comparable to those with the drug finasteride but without side effects.[4,5]

Various concentrations of Saw Palmetto were analyzed for cytotoxic effects on prostate cell lines and generic cancer cells. The extract inhibited proliferation of prostate-derived cell lines in a dose-dependent fashion. The berry extract reduces COX-2 expression, which is associated with an increased incidence of prostate cancer.[18]

Nettle (*Urtica dioica*)

In medieval times, Nettle root was valued as a diuretic and to alleviate joint problems. Studies find it beneficial for BPH and it is widely used for this condition, especially in Europe. Nettle root is used in Germany as a component of approved medicines for treatment of BPH.[22] Nettle root is approved by the German Commission E for treatment of urinary difficulty in BPH stages I and II. In a 6-month, double-blind placebo-controlled study, significant reduction in urinary tract symptoms was observed in those taking Nettle extract.[23] Nettle root contains plant sterols (including B-sitosterol), glycosides, glycoproteins, acids (including malic, salicylic and others), polysaccharides, fatty acids, and lignans.[4]

Nettle root extract is shown to exert potent anti-inflammatory influence. Compounds in Nettle root exert some influence to inhibit cell proliferation through modulation of hormonal binding to receptors on human prostatic membranes. Nettle extract is found to increase androgen binding capacity and to modulate SHBG binding to receptors on human prostatic membranes, which inhibits cellular growth within the prostate.[1,24,25]

Nettle extract is found to act on aromatase, EGF, and prostate steroid membrane receptors.[26] Specifically, the lignans of Nettle root inhibit sex hormone activity and block the binding of EGF. Nettle root is also found to inhibit proteolytic enzymes that are involved with genito-urinary inflammation and infections. Studies report that Nettle root is effective in decreasing the symptoms of BPH, and in some cases is found to help decrease prostate size. Researchers often find Nettle root is most effective when combined with Saw Palmetto and Pygeum.[4]

Crateva nurvala

Crateva is a tree often found growing along the banks of rivers in the sub-Himalayan regions of India. The stem bark is valued in traditional Ayurvedic medicine as a kidney and urinary bladder tonic and is the preferred treatment for urinary disorders that reoccur. Crateva bark has the ability to increase the tone of smooth muscle. It is also used in the treatment of prostate enlargement especially with bladder sensitivity.[27,28]

In a human study, baseline measures of urinary function and bladder tone were assessed. With three months of ingestion of Crateva tea, significant improvement was found compared to baseline with an increase in healthy urinary function and bladder tone in these individuals.[29] Lupeol, a pentacyclic triterpene isolate of Crateva bark, is shown to exert anti-inflammatory activity along many pathways including NFKB (nuclear factor kappa-B).[31]

Pumpkin Seed Oil (*Cucurbita pepo*)

Pumpkin seeds are valued worldwide as a nutritive food and powerful medicine. The Cherokee and Iroquois people valued pumpkin seeds as a pediatric urinary tonic and as a diuretic. Pumpkin seed is a folk remedy in Europe for bladder irritation and urinary disorders due to prostate issues.[32]

The German Commission E documents the usefulness of Pumpkin seed oil for supporting healthy prostate function. It is considered effective for stage I and II BPH, particularly for urinary symptoms including nocturia and incomplete emptying. The German Commission E also recognizes Pumpkin seeds as beneficial for irritable bladder.[32]

Pumpkin seeds contain ample amounts of plant sterols (including sitosterol, stigmasterol and others), fatty acids (rich in linoleic and oleic acids) and zinc. They also contain carotenoids (including lutein and B-carotene), tocopherols, and other compounds.[1,4,32]

The plant sterols found in Pumpkin seeds are found to significantly decrease elevated levels of DHT in humans with BPH. It is thought that Pumpkin seed phytosterols can bind to androgen receptors to help prevent prostate growth. Patients with mild BPH symptoms were given Pumpkin seed oil for three months with improvement in all parameters. Pumpkin seed is found to exert a tonic influence on the urinary bladder and to enhance relaxation of the sphincter at the neck of the bladder.[1,4]

Pygeum (*Pygeum africanum*)

Pygeum is a tall evergreen tree native to Africa. The bark is found to be rich in phytosterols including B-sitosterol, B-sitosteryl glucoside, and B-sitostenone, and other sterols and steroid intermediates. It also contains triterpenoid acids and fatty acids. Pygeum bark has been used as a tea by Africans specifically for urinary disorders.[4]

Pygeum is found to be a potent inhibitor of oxidative damage within the prostate and also contains compounds that enhance prostate health. It is found to help reduce nocturia and relieve many of the genito-urinary symptoms of BPH.[33-36] It is thought to be effective through its anti-inflammatory actions and ability to inhibit numerous pathways that promote growth of the prostate gland. It is shown to exert protective influence on the urinary bladder and to exert antioxidant benefits.

In a number of controlled clinical trials with 1562 men, Pygeum demonstrated significant improvement in urologic parameters where nocturia was reduced by 19% and peak urine flow was increased by 23%.[4] Used in France to treat mild to moderate BPH since 1969, Pygeum is found to help calm prostate gland inflammation and to alleviate nocturia, dysuria, and bladder fullness.[1]

Constituents in Pygeum include long-chain fatty alcohols, B-sitosterol, and other fatty acids. It contains trans-ferulic acid esters that are found to reduce cholesterol concentration in the prostate, which limits the synthesis of testosterone. Phytosterols, such as B-sitosterol, B-sitosterone, and campesterol, are found to compete with the precursors of androgens and to inhibit synthesis of prostaglandins. Triterpenes are found to exert anti-inflammatory influence in prostate connective tissue.[1]

Lycopene

Lycopene, a member of the carotenoid family, is a natural fat-soluble pigment found in many fruits and vegetables, and is especially abundant in tomatoes. It is also found in watermelon, papaya, and pink grapefruit. Lycopene is shown to have an affinity for the prostate where it is found to concentrate in the prostate tissue. Lycopene exerts strong antioxidant activity and is found to inhibit cell growth in normal prostatic epithelial cells. It is reported to promote apoptosis in hyperplastic prostate tissue and to modulate cell-signaling. Lycopene is also found to inhibit 5-alpha-reductase (reducing production of DHT) and interleukin-6 signaling.[4,37-39] Human studies show that Lycopene helps improve prostate tissue health and decrease enlargement.[40]

Black Pepper (*Piper nigrum*)

Black Pepper is widely known for its ability to enhance the bioavailability of herbs and nutrients. In Chinese and Ayurvedic medicine it is added to formulas for its ability to "move" other compounds to carry them throughout the body.

One way that piperine is thought to enhance bioavailability is through influencing the cellular biomembrane and intestinal enzymes.[41-43] Piperine is found to reduce levels of pro-inflammatory mediators including COX-2, IL factors, and TNF-alpha. It also supports healthy glutathione and super oxide dismutase levels.[44,45] It is found to inhibit VEGF and to modulate cytokine and growth factor responses.[46] Piperine is known to be antioxidative, antimutagenic, antibacterial, and hepato-protective.[42,47]

For more information on any of the ingredients listed here, including extensive research or individual monographs compiled by Donnie Yance, please email info@naturaedu.com.

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