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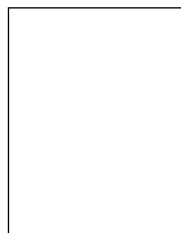


You can't remember where you put your keys. You wonder why you came into the kitchen. That word has been on the tip of your tongue for an hour now. And you'd better remember your boss' wife's name before the end of the dinner party. It wasn't always this way. What happened?

Or maybe you've always felt cheated by your memory. While others seemed to sail through their exams after partying all semester, you've had to *work*: nose to the grindstone, cracking the books, living on coffee, falling asleep in the carrels to take it all in. There has to be a way to tune up your brain ... you just wish you could find it. Meanwhile, you keep running just to stay in place.

Or maybe you've got a steel-trap brain, and have always had one; still, you know it isn't perfect. Like an athlete of the mind, you're always looking to make a new personal best to think sharper, clearer, faster ... to have the edge. In the classroom. At your business presentation. In your chess game. Playing Trivial Pursuit.

Whether it's recovering what you had or improving on Mother Nature, we all know that **better brain function means better quality of life**. Holistic International™ offers powerful, unique brain nutrients and botanicals to lubricate those mental gears and polish the mirror of the mind until it dazzles.



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Well, all right: the headline is an exaggeration -- but it's not that far from the truth as you might think. **Saw palmetto** is the most common herbal for **benign prostatic hyperplasia** (BPH), the noncancerous swelling of the prostate gland which affects nearly all men to some degree beginning in late middle age, leading to **discomfort, nocturia** (the need to get up in the middle of the night for a trip to the bathroom), **frequent and sudden urges to urinate** even when the bladder is not full, **intermittency** (dribbling at the end of the urinary stream), and **incomplete emptying of the bladder** when urinating. Saw palmetto, along with a few other herbals, is reached for in health food stores across North America almost by reflex. And there *is* evidence that this botanical is helpful for improving the *symptoms* of BPH¹. This can also be said of **β-sitosterol**⁵, and to a lesser extent of such

herbals as *Pygeum africanum*² and **stinging nettle**^{3,4}, as well as the amino acid combination **Paraprost** (glycine, alanine, and glutamic acid), which is widely used for prostate concerns in Japan. But (and this is a big "but") when it comes to the underlying disease process itself, **there is absolutely no evidence that any of these natural therapies actually reduces the size of the prostate** -- that is, they fail to actually address the underlying *problem*, as opposed to its *symptoms*. Indeed, controlled trials which have investigated this point have specifically reported that there is no effect on prostate volume from taking saw palmetto¹ or β-sitosterol⁶, the most evidence-backed of the standard prostate health botanicals.

By contrast, there is plenty of evidence that finasteride (**Proscar**®), the most famous *drug* therapy for BPH, can reduce prostate



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Holistic International, manufacturers and distributors of the most exciting lines of envelope-pushing nutritional supplements in Canada, welcomes you to this issue of The Holistic Lifestyle, published eight times a year. The Holistic Lifestyle is designed to provide our customers with essential information and news of breakthrough research to help you make the best decisions to meet your health goals through supplements and lifestyle choices.

The Holistic Lifestyle also provides news about Holistic International and its products, along with trade shows, retailer information, and government regulations and their impact on your health freedom.

Comments? Questions?
We want to hear from you!

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volume. Unfortunately, finasteride is slow (one year minimum) to take effect, does not work with several classes of patients, is very expensive, and has significant **side effects, including erectile dysfunction and loss of libido**. So men are left with a poor choice: herbs which provide symptomatic improvement with no halt to the loss of prostate health, or a drug treatment which addresses the core problem, but causes

with a microscopic husk which prevents its full assimilation by humans; by contrast, the pollen extract discussed here is a standardized extract, which incorporates a specific 20:1 ratio of lipid- and water-soluble components extracted under low-temperature conditions to bypass the pollen's protective sheath.

Proven in Controlled Trials

Many people find it strange that something as simple as flower pollen could have powerful effects on prostate health. And yet the clinical evidence is plain: **standardized pollen extract quickly improves prostate symptoms and reduces prostate volume**. In one double-blind, controlled study⁸, sixty men with symptomatic BPH received either the pollen extract or placebo for six months. **Sixty-nine percent of men receiving the pollen extract showed improved overall symptoms**, compared to less than a third of the placebo group; the differences were statistically significant for such measures as **fewer incidences of nocturia, decreased leftover urine in the bladder** after urination ("residual urine volume"), and **reductions in the volume of the prostate** as measured by ultrasound (see Figure 2). Compared to the placebo group, there were also more improvements reported by men receiving the pollen extract in hesitancy (inability to release urinary flow) and intermittency, but these results were not strong enough, in this small a group over this short a period, to be statistically meaningful.

Another double-blind, placebo-controlled trial of the pollen extract was reported by Becker and Ebeling⁹. Ninety-six men with BPH completed the twelve-week trial, during which the men were on either the pollen extract or the placebo for one six week period, and then "crossed over" to the other pill. **Statistically significant results were experienced while the men were taking the pollen extract in nocturia and residual urine volume**,

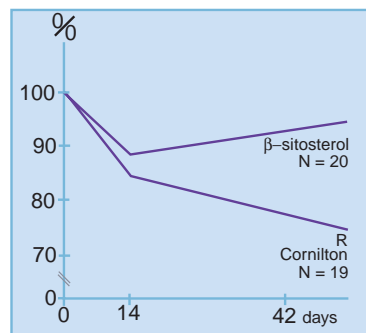


Figure 1: Significant reduction ($p < 0.01$) of the serum PSA after 6 weeks' Defined Pollen Extract. Redrawn from (17).

problems of its own. But there is a way out of this dilemma. A herbal remedy long available in Europe is just now becoming available in North America. It's all-natural, inexpensive, and free of significant side effects; it improves symptoms; it works faster than most other therapies, including saw palmetto; it shows promise for more prostate health concerns than just BPH; and it has been **proven to reduce prostate volume in controlled clinical trials**. It is a **defined pollen extract**, sold under such trade names as Cernitin, Cernilton, and **Prostaphil**[®], and it stands poised to revolutionize the way many men approach prostate health.

This substance should not be confused with bee pollen. Bee pollen is a mixture of whatever pollens with which the insects happen to have come into contact. The pollen extract, by contrast, is a mixture of several *specific* pollen sources (primarily rye, but also including timothy grass, corn, hazel, sallow, aspen, oxe, and pine pollens). Also, bee pollen in its raw form is covered

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along with borderline significant decreases in daytime urinary frequency. The investigating physicians reported **“very good” or “good” improvement during the pollen phase** of in 55.2% of the men, whereas only 13% of the placebo-phase men were so reported; and while **“poor” results were reported on placebo for 41.9% of the men**, only 3.4% of the pollen extract males’ progress was so rated. These results were also significant from a statistical perspective -- amazing results over the course of a mere six weeks, with so few men enrolled in the trial. When these men were followed up for just twelve additional weeks in an open-label study¹⁰, the **pollen extract also significantly improved daytime urinary frequency, while residual urine was decreased by 47%**. Results which did not meet the criteria for statistical significance included **reduced painful urination, urgency, and discomfort**, while **40.4% of men showed reductions in prostatic volume** (as compared to 12.1% of the placebo group).

In a massive open-label observational study¹¹ on men with several prostate disorders, including 1,116 with BPH, those men with BPH and chronic prostatitis (see below) experienced a **55.9% reduction in prostate volume while on the pollen extract**, along with **decreases in residual urine, increases in urine flow rate, and greater total urine volume with decreased time taken to empty the bladder**. Both patients and physicians rated the average improvement “good to very good.”

Better than Other Botanicals

How do these results stack up to prostate herbals the more common in North America? Fortunately, controlled trials have been performed to answer this question, and the answer is “very well, thank you.” In a head-to-head trial against Tadenan (the best-studied and most famous brand of *Pygeum africanum* in Europe), Dutkiewicz¹² reported that **78% of the men in the pollen extract group reported subjective**

improvements, versus “only” 55% of the *Pygeum* group. Another trial¹⁶ compared it with Paraprost: **significant improvement in residual urinary volume, flow rate, and (again, most importantly) prostatic weight was seen in the pollen extract group**; the length of time required to urinate was also better as compared to the Paraprost group.

The most impressive comparison is that with **β -sitosterol** -- both because **β -sitosterol** is perhaps the most rigorously studied of all the common prostate health herbals, and because of the unique insight the trial yielded about the power of the pollen extract. The trial¹⁷ found that while there were improvements in both groups for **subjective symptoms, painful urination, and frequent urination, greater progress was made in the pollen extract group**, while the groups equally demonstrated **improvements in straining, urinary volume, residual volume, and intermittency**. This trial also measured the levels of **prostate-specific antigen (PSA)**, a marker used to detect prostate cancer, along with **prostatic acid phosphatase (PAP)**, a measure normally elevated in many prostatic dysfunctions. Measuring these markers was a first for both botanicals. **Both PAP and PSA were significantly reduced in the defined pollen extract group, whereas no**

Reductions in the volume of the prostate as meas-

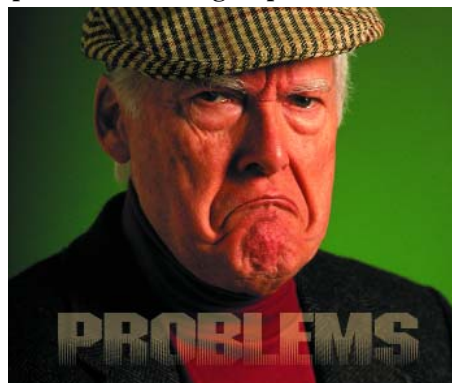
pollen extract can actually help the underlying disease. The difference is crucial,

To date, no trial has directly compared the therapeutic effect of the pollen extract to **saw palmetto**. However, based on the available evidence, it is clear that **the pollen extract is superior to saw palmetto on several points**. Most important is the fact, noted above, that while it may improve symptoms such as nocturia and peak flow rate, **saw palmetto has never been shown to reduce prostate volume** -- whereas several trials, as we have seen, have reported just this for the pollen extract. This means that **saw palmetto can only address symptoms, while the defined pollen extract can actually help the underlying disease**. The difference is crucial, especially from the perspective of the long-term prostate health of the men taking these herbals, who may delay surgery because of symptomatic relief. Also, it is clear that **saw palmetto does not work as quickly, or for as many men, as does the pollen extract**: from the published evidence¹⁸, it would appear that four to six months are required to report significant improvements in symptoms using saw palmetto, whereas Becker and Ebeling¹⁰ could report improvement after only six weeks! And, indeed, there is now some question^{18, 19} as to whether saw palmetto actually of any help at all in BPH; the arguments are complex, and space is limited, so we will not enter into this debate.

Several other open trials of the efficacy of standardized pollen extract against BPH have been performed^{13, 14, 15}, and these have also been successful, but because of their small size and uncontrolled design, we will move on.

Other Prostate Concerns

BPH, of course, is not the only prostate disorder that men may face. Another is **chronic prostatitis (CP)**, an ongoing inflammation of the prostate gland, reflected in the presence of markers of inflammation in the prostate fluid. Chronic



significant change was reported in the β -sitosterol group (See figure 1).



prostatitis is sometimes caused by recurrent bacterial infection, but is often present in the absence of such “nasties;” at least some prostatitis may actually be caused by unusual muscle tensions at the base of the pelvis²⁰, and a trial is being launched at Stanford University to see if behavioral therapy can help ease the symptoms where this is the root problem. There is also **prostatodynia**, which is distinct from CP in that the chemical markers of inflammation are not seen in the prostatic fluid. It is very important to note that **there is no evidence that saw palmetto or the other common herbals for BPH are helpful for these conditions**, with the possible exception of Paraprost²⁵. Because the symptoms of these disorders sound similar, many men with CP or prostatodynia mistakenly self-medicate with saw palmetto, with the result that their symptoms remain and their health problem goes untreated. Even when physicians are consulted (which is always the best course of action), the relative ignorance of many mainstream MDs about the herbal pharmacy leads them to give the go-ahead for this useless course of action. By contrast, **several open trials have found the pollen extract to be helpful for CP and prostatodynia**^{11, 21, 22, 23, 24}. Rugendorff et al ran one such trial²¹, in which 72 men with CP or prostatodynia uncomplicated by prostate stones or non-prostatic complications like blockages of the bladder “neck” were administered the defined pollen extract. Examination **by digital rectal exam, urine flow, and white blood cell count** along with other immune markers found that **78% of these men were helped by defined pollen extract**. A second group of men whose CP was complicated by the factors mentioned above were not found to benefit, however.

Hope for Prostate Cancer

An even graver prostate health concern for many men is **prostate cancer**. In men, excluding skin cancer, prostate cancer is the

single most commonly-contracted cancer form, with a new diagnosis every two minutes in the United States and a new *death* every fifteen minutes. The American Cancer Society estimates that 180 400 men will be diagnosed with prostate cancer in the United States in this year alone -- and diagnosed prostate cancer represents a mere fraction of the total incidence of this disease. Autopsy studies^{36, 37} show that 15 to 30% of men over 50, and **60 to 70 percent of men over the age of 80, have latent, undiagnosed prostate cancer**. There has been exciting progress made in the last few years in the discovery of natural ways of reducing the risk of prostate cancer, including successful double-blind, placebo-controlled trials with **selenium**²⁶, **alpha-tocopherol**²⁷, and the carotenoid **lycopene**²⁸. Preliminary evidence now suggests that it is possible that the defined pollen extract may yet prove to be a safe, natural herb to help the fight against the second greatest cause of cancer death in men.

Statistically significant results were experienced while the men were taking the pollen extract in nocturia and residual urine volume.

In the course of attempts to discover the components of the extract which inhibit prostate cell growth, a fraction of the lipid-soluble extract in the defined pollen extract (labelled **FV-7**) has been discovered which appears to have the power to halt the growth of prostate cancer cells. In 1990, Habib at coworkers²⁹ tested defined pollen extract to see what its effects would be on the growth (in test-tube conditions) of nine cancerous and noncancerous cell lines derived from humans. They found that, of the cell lines tested, **the pollen extract would only inhibit the growth of prostate cell lines**. Further, it was noted that the growth inhibition applied only to the epithelial cells of the prostate (the gland itself), not the stroma (the surrounding smooth muscle cells). Later studies^{30, 31} on FV-7 found that this subfraction of **the defined pollen extract inhibited the growth of a human prostate cancer line**. These investigators

suggested that the active ingredient in the pollen extract might be a cyclic hydroxamic acid called **2,4-dihydroxy-2H-1,4-benzoxazin-3(4H)-one (DIBOA)**.

Yet other investigators have disputed this conclusion³²: they found that **DIBOA could also inhibit a breast cancer line**, and found compounds in the pollen extract which were more **more potent inhibitors of the prostate cancer cell line**. All of these compounds appear to work by **inducing cell death in the cancer cells**³². Meanwhile, yet another group of researchers has reported a whole new category of tumor-inhibitory substances in rye pollen: the **secalosides**⁴³.

Thus, while DIBOA must play some role in the anti-prostate cancer effect of the defined pollen extract, it is not the *only* active ingredient with anti-cancer power in the test tube, and other compounds may be responsible for the *specific* effect on prostate cancer cells. Whatever the true active ingredient, however, one thing is clear: **defined pollen extract may prove to be potent nutritional support against prostate -- and perhaps other -- cancers**.



In this context, **the lowering of PSA levels** experienced by men receiving the pollen extract¹⁷ is very tantalizing. But we cannot be certain that this means a

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reduction in risk of prostate cancer: **Proscar**[®], for instance, also lowers PSA, but does not appear to have any effect on this terrible disease. Thus, it is possible that this lowering of PSA may reduce the usefulness of the PSA test as a marker for prostate cancer (as is known to happen with **Proscar**[®]); as with **Proscar**[®], then, it seems prudent to suggest that **men should have their PSA checked before starting on the pollen extract**, to establish a baseline from which future tests can be evaluated. Though the test-tube results will clearly have to be confirmed in living humans, the forty-year safety record of defined pollen extract and its ability to lower PSA certainly make it worth a second look by those concerned with this deadliest and most intimate of killers.

How Does it Work?

By now, many readers will be wondering *how* exactly the defined pollen extract can exert such profound effects on prostate health. There are some hints in the literature, but final answers still escape us. Partly, what we are seeing is an **anti-inflammatory effect**: in test tube studies, the pollen extract inhibits the conversion of **arachidonic acid to series 2 eicosanoids**, which are local, cellular “hormones” which promote inflammation. Because inflammation is the key marker of chronic prostatitis, it is obvious how this would be helpful in cases of CP, but it may also enhance any anticancer effects of the extract. This is because cancer cells use series 2 eicosanoids -- most notably **prostaglandin E2 (PGE2)** -- to defend themselves from the body's immune system³⁴, because PGE2 inhibits natural killer cell activity. Thus, substances which inhibit series-2 eicosanoid formation may have anti-cancer effects as well as anti-inflammatory ones.

Another mechanism at work in the symptomatic improvement generated by the pollen extract is its **effects on smooth muscle tone in the urinary tract**. In isolated urinary tract muscle cells^{57, 58, 59}, and one trial in humans³⁵, it has been found that

the pollen extract balances the muscle tone of the urethra and bladder, resulting in less pinching off of the urine stream. This would help explain the extract's improvement in such symptoms as incomplete bladder emptying, hesitancy, or intermittency. It may also explain some of the results in chronic prostatitis, since (as noted above) unusual muscular tensions may play a role in much CP.

Both PAP and PSA were significantly reduced in the defined pollen extract group.

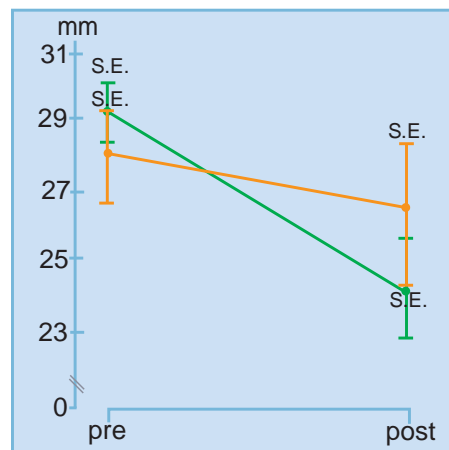


Figure 2: Prostate volume. Redrawn from (8).
■ -4.6% Placebo (n=24) ■ -18.2% Cernilton (n=29)

But the exact method by which the defined pollen extract exerts its most exciting influence on the prostate -- namely, its ability to reduce the actual volume of the prostate -- remains unknown. As noted above, test-tube studies have shown²⁹ that the pollen extract does directly inhibit the growth of prostate cells, but *how* exactly it does this remains an enigma. One logical assumption would be that the pollen extract is exerting effects on the hormones which drive BPH. **Proscar**[®], the most successful *drug* therapy for BPH, also reduces prostate volume. It does so by inhibiting **5- α -reductase (5AR)**, the enzyme which converts testosterone into the much more prostate-stimulating **dihydrotestosterone (DHT)**. **Defined pollen extracts, likewise, inhibit 5AR**³⁸; however, they *also* inhibit the less-known hydroxysteroid

oxioreductase (HSORred) enzymes, which convert DHT to the less-stimulating 3- α - and 3- β -diol. In other words, the pollen extract directly decreases both the *synthesis* and the *clearance* of DHT. What the end result of this would be is unclear, but the net effect on DHT activity levels in the prostate could very well be zero. Clearly, more studies are needed, but *direct* inhibition of DHT may not be a key mechanism of the pollen's activity.

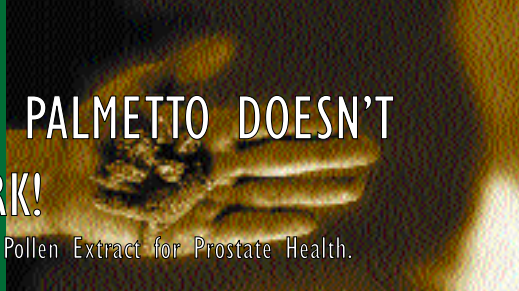
Another possible mechanism of prostate shrinkage by the pollen extract was identified by Japanese researchers³⁹. These investigators subjected rats to high levels of testosterone so that they would develop BPH, and then administered the defined pollen extract. While significantly reducing the weight of the prostate, **the pollen extract elevated zinc levels in the gland** -- this, despite the fact that there is very little zinc in the extract itself. When present in the prostate, zinc has anti-5AR activity⁴⁰, and also **reduces the binding of male hormones⁴¹ and prolactin⁴² to the prostate cell receptor**, all of which would be expected to reduce the growth-triggering effects of these hormones. Since zinc levels are depressed in BPH and prostate cancer⁴⁴, simply taking zinc orally may not increase zinc levels *specifically* in the prostate, and may thus not be effective at safe dosages.

Furthermore, the pollen extract **inhibits absorption of the toxic heavy metal cadmium**⁴⁵, which is linked with prostate cancer in many studies⁴⁶ and which can directly cause prostatic growth and cancer in animal models⁴⁷. Levels of cadmium are increased in both BPH and prostate cancer⁴⁴. But while these effects on mineral metabolism might help explain a *slowing of growth* in the prostate, and enhance any anti-cancer effect the pollen extract may prove to have, they probably do not explain the reported *reductions* in prostate volume. Thus, while the *fact* of reduced



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A stone by any other name ...

prostate volume remains on solid ground, the *mechanisms* of this revolutionary effect remain elusive.

Not Just for the Prostate... And Not Just for Men!



Most people taking the pollen extract are using it for the health of their prostate, which is by far the best-backed usage for this botanical. Yet there are hints in the literature of a broad range of other applications which get much less attention. One such property is **detoxification and liver protection**. In addition to the reduction in cadmium absorption mentioned above⁴⁵, investigators in Poland have found that the **defined pollen extract provides protection against such toxins as ammonium fluoride^{48,49}, paracetamol** (an anti-inflammatory and pain killer which is among the drugs most commonly consumed in toxic overdose)⁵⁰, **organic solvents⁵¹, allyl alcohol^{52, 54}, the deadly carbon tetrachloride⁵², and galctosamine^{52, 53}** in lab animals. Some of this protection may be due to the **antioxidant properties** of the extract⁵⁵,

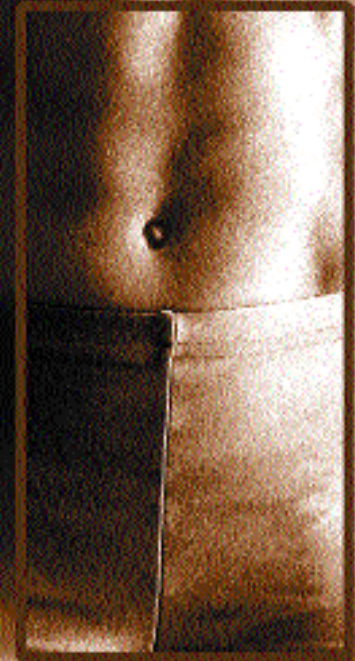
along with its ability to **increase levels of liver detoxification enzymes⁵⁶**.

Another possible benefit from the pollen extract may be **protection from atherosclerosis**. In one study, animals fed a high-fat diet along with defined pollen extracts had **lower cholesterol and triglycerides** compared to animals not receiving the pollen extracts⁵⁵. Another study⁵⁶ reported that such animals had **reduced total cholesterol and elevated HDL ("good") cholesterol**, along with **reductions in atherosclerotic plaques**: the group receiving the high-fat diet alone had a plaque intensity of 85.5%, while the group which also received the defined pollen extract had only a 33.7% plaque intensity.

Finally, although we emphasize that the evidence is *purely anecdotal*, in some parts of the world more *women* buy defined pollen extracts than men, because they have found that **the pollen extract helps with urinary incontinence** -- a result very consistent with the improved bladder and urethral smooth muscle tone balance^{35, 57-59} which the pollen extract is known to yield. Funding is presently being sought to run a controlled trial on this application.

The Future of Prostate Care

Proscar® and other drugs for BPH are effective, but come with side effects and a cost which make drug therapy unattractive to many men. The natural alternatives most common on Canadian health food store shelves may help relieve symptoms, but do not ultimately address the underlying disease. But defined pollen extract has been effectively helping European men with many prostate health problems for decades now, and is proven to do what no other herbal can: shrink swollen prostates. As the pollen itself is golden, so defined pollen extract may open up a *golden age* for safe, natural therapy for the most personal of male health concerns.



Traditional herbal medicine for:

- Kidney stones
- Gallstones
- Liver protection & detoxification
- Immune support and more!

To the people of South America, it's *Chanca Piedra*, the "stone breaker." In Ayurvedic tradition, it's *Bahupatra*. Botanists classify it as *Phyllanthus niruri*. Hurricane Weed, Seed On The Leaf, Feuilles de la Fievre, Child's Pick-a-back, Tamalaka, Turi Hutan ... whatever you call it, this short tropical shrub is famed for its healing powers.

Western science is beginning to confirm Chanca Piedra's ability to support the health of the detoxification organs. From increasing the flushing-out of the kidneys, to relaxing the smooth muscles of the bladder, urethra, and biliary tract, to guarding the liver against toxins and the replication of some viruses, Chanca Piedra may support the function of the body's detoxification systems in many ways ... and by many names.



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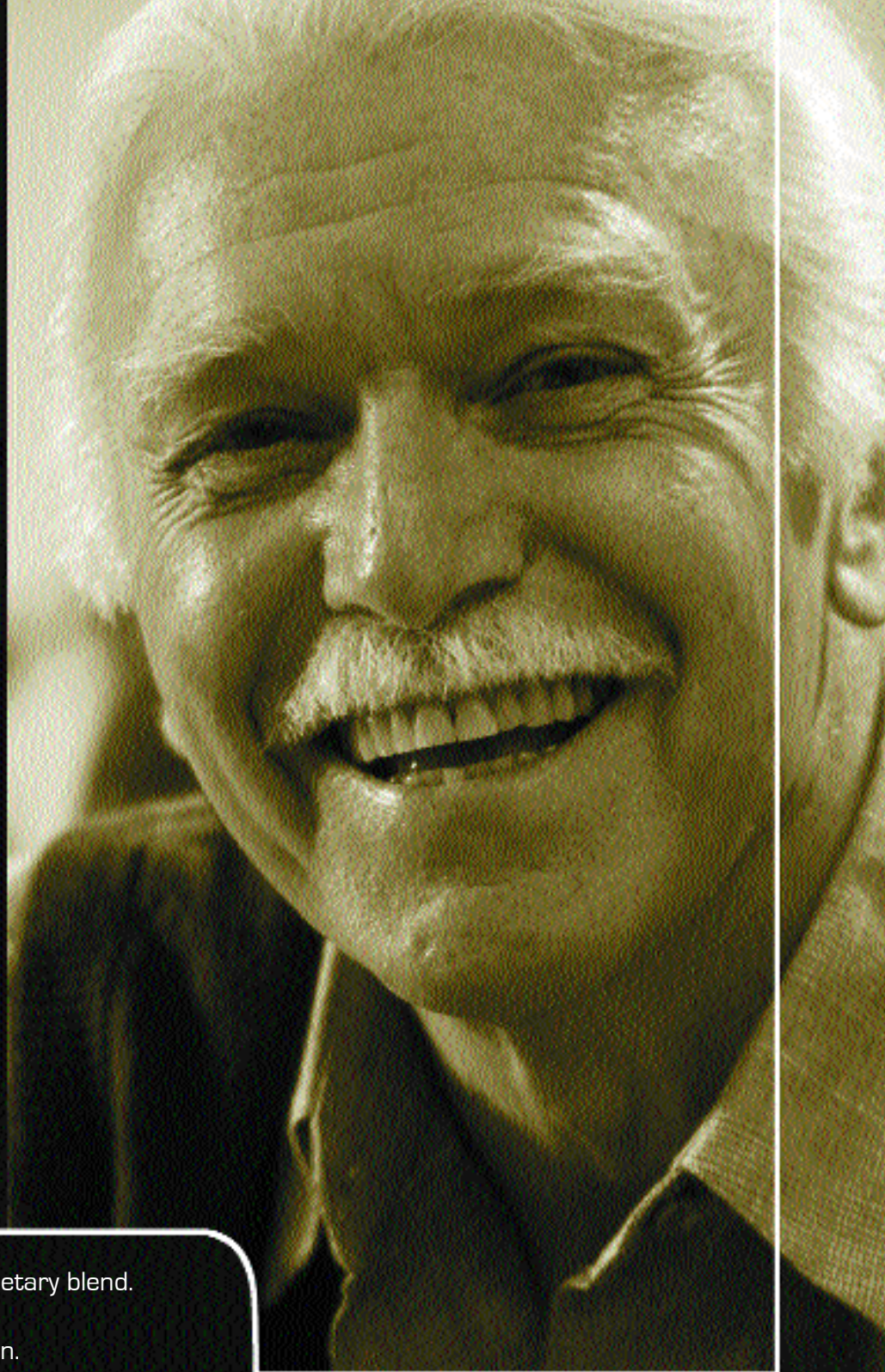
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Pollen Power for the Prostate

The health of the prostate is something most men never think about ... until they're forced to. So the fact that so many men are willing to take drugs with known, serious side effects, or to even undergo surgery, attests to how common, how unpleasant, and how *personal* prostate health concerns can be. Saw Palmetto, Stinging Nettle, *Pygeum africanum*, Beta-sitosterol, and other herbal formulas have become widely known as natural ways to support the health of the prostate, but research shows they don't live up to many men's expectations. And in some cases – like Saw Palmetto – it's not even certain that they're of any help at all.

Prostaphil-2® may change all that. Used by men for two generations in Europe, the power of this proprietary pollen extract from Sweden is backed by numerous clinical and experimental studies. Research shows that this defined pollen extract can **support a healthy prostate**, in ways that the more common prostate herbals don't. Look into **Prostaphil-2®**. You may just find that you sleep better at night.



- Unique proprietary blend.
- Clinically proven.
- Safer and more effective than Saw Palmetto.



IS YOUR BETA CAROTENE TOXIC?

The version in your multivitamin may be hazardous to your health!

Beta-carotene, the main pigment which gives the orange color to sweet potatoes and carrots, is well-known and well-represented in the daily supplement regimen of nearly all health-conscious North Americans. For many years, this nutrient was thought to be simply a source of **provitamin A** -- that is, a substance from which the body could make vitamin A itself (retinol). But all this began to change in the early 1980s, when a powerful, large-scale epidemiologic study¹ revealed an astonishing connection between intake of this carotenoid and lung cancer: **men who took in the greatest amount of carotenes were seven to eight times less likely to develop lung cancer than those who took in the least** -- a result unaffected by their varying intake of retinol or other nutrients. This result represented a risk reduction so great as to indicate that **smokers with the highest carotene intakes had the same relative risk for lung cancer as non-smokers** in lower-intake groups. Since 1977, 53 of 135 epidemiological studies have found **significant reduction of risk for cancer from β -carotene**, measured as dietary intake or plasma levels; fully half of the remainder also found risk reductions, but the results were not strong enough to be considered statistically significant.

This result was in line with evidence accumulated before and since on the role of β -carotene as a potent **antioxidant** (especially as a **quencher of singlet oxygen (1O_2)**) with **anticarcinogenic** powers. Extensive experimental work in lab animals⁵ and isolated cells⁶ indicated that **β -carotene can prevent the development of cancer, and even stop the growth of existing cancerous cells**. Cellular studies found that β -carotene could **decrease transformation of benign tumors to malignant cancers, increase the cell-to-cell communication normally lost by cancer cells, prevent UV damage, reduce chromosome**

instability induced by viruses, **kill tumor cells** in some cancer lines, and even **induce differentiation**, turning some cancer cells into normal, healthy ones again⁶. Excitement built, and double-blind, randomized, placebo-controlled trials in men at very high risk for lung cancer were initiated: the **Alpha-Tocopherol and Beta-Carotene (ATBC)** Cancer Prevention Study, and the **Carotene and Retinol Efficacy Trial (CARET)**.

Unbelievable Results

The results came as a complete surprise. The trials^{7,8} were called off early in 1995 and 1996, because preliminary analysis not only failed to find any improvement in lung cancer rates in the active groups, there was a **non-significant suggestion of an increase in lung cancer rates!** And while an analysis published as a press release in the New England Journal of Medicine declared that another large β -carotene trial -- the Physicians' Health Study -- had found no such risks, it found no benefit either.

On the one hand, **the excess cancer incidence was not statistically significant**, so there is the temptation to ignore the results until better data are available; but when two separate, large-trials seem to show the same increased risk, caution is in order. So what might be going on here?

Flawed Trials

Actually, probably several things at once. For one thing, there is the **high-risk populations used**: ATBC and CARET deliberately chose to study men who were long-term smokers (and, in ATBC's case, also asbestos workers!) in order to get a clear therapeutic result. But it now appears from new human trials that, while β -carotene can prevent the cells from becoming cancerous (initiation)⁹, it may not be able to halt the spread of existing cancers (progression)¹⁰. Subjects at very high risk **may thus have already have had early-stage cancer** when the trial began, and β -carotene may not affected them.

Worse, it would appear that **smoking may make β -carotene a health hazard when it is given alone**. This is because the teamwork involved in antioxidant

biochemistry is upset by the massive doses of free radicals to which smoking exposes smokers' lungs and bodies. When a free radical is quenched by an antioxidant, the "lonely electron" is given a mate by the antioxidant molecule. In the process, however, *the antioxidant itself becomes a free radical*. Progress is only possible because the new free radical is less toxic than the old one. The body's antioxidant defenses are designed to work as a team, with one antioxidant quenching a free radical, and then being itself quenched by another antioxidant in turn, leading to progressively less toxic byproducts, until vitamin C -- the final acceptor -- is finally flushed out through the kidneys. It's like a game of "hot potato," with the potato cooling off with each pass.

In smokers, however, this process is interrupted, because **smoking rapidly depletes other antioxidants**. As a result, giving β -carotene *alone* to smokers may have resulted in a high level of toxic β -carotene "radicals" accumulating in the lungs from contact with cigarette smoke, with no vitamins C and E available to detoxify them¹¹. Interestingly, later analysis

synthetic β -carotene itself caused chromosome damage in these cells.

of the ATBC and CARET data suggested **no risk, or even a protective effect, for β -carotene in light smokers** even as heavy smokers seemed to show increased risk^{2,3}. A more recent trial using a combination of antioxidants⁴ found that **β -carotene in combination with selenium and vitamin E significantly cut cancer risk**; better results might have been expected had vitamin C been included. In fact, a new Physicians' Health Study¹³ is now under way which will use a combination of E, C, β -carotene, and a multivitamin against cancer and cardiovascular disease; we await the results with great optimism. In food, of course -- the source of β -carotene in the original epidemiological studies -- **β -carotene always comes along with vitamins C and E**; supplement programs should follow this pattern.

The ATBC subjects' high intake of alcohol may also have been a factor, because **high-dose alcohol interacts dangerously with β -carotene** because of their use of common liver detoxification

pathways¹². Nearly all of the apparent excess lung cancer in the CARET group was in a subpopulation with high alcohol intake²; and, similarly, the risk of cancer appeared to be higher in regular drinkers than non-drinkers in ATBC³, although this finding has recently been disputed¹⁶.

The Wrong Molecule

But perhaps the most disastrous failure in the design of the controlled trials is that they used the wrong β -carotene. For most supplements, whether they are derived from cellular "factories" or pharmaceutical ones makes no difference to their chemical structure or biological activity; natural versus synthetic vitamin E is one of a very few exceptions to the rule.

Crucially, β -carotene is another.

The β -carotene used in CARET and ATBC was synthetic β -carotene, which is chemically different from the β -carotene found in food. Synthetic β -carotene is entirely in the "trans" form; by contrast, natural β -carotene is a mixture of trans and cis isomers. Many health-conscious people are by now aware of the great difference between the trans fatty acids in partially hydrogenated vegetable oils and the cis fats in natural EFA sources. In trans bonds, the hydrogens attached to two adjoining double-bonded carbons are on opposite sides of the molecule, giving it a flat molecular shape. Cis isomers, by contrast, have one double bond in which the two carbons' hydrogens are on the same side of the molecule's backbone; and since the two hydrogens repel one another (because they both carry a positive charge -- an effect rather like two magnets aligned at their "north" end), the molecule is bent at this point (see Figure 3).

Synthetic β -carotene: Not an Antioxidant

We do not want to bore you with detailed chemistry, so let us get to the point: while trans β -carotene can still be used to make vitamin A, only the cis form is directly useful as an antioxidant in the body! In one trial¹⁴, subjects were given either natural β -carotene supplements from the algae *Dunaliella bardawil*, synthetic β -carotene, or a placebo, and levels of a

marker of lipid peroxidation (free radical damage to cell membranes, LDL, etc) were measured. Not only did the all-trans β -carotene fail to provide any measurable antioxidant protection compared to the dummy pill, but the group receiving synthetic β -carotene actually had 13% more markers of free radical damage than the placebo group! Although this result was not statistically significant, it contrasts sharply with the group receiving the natural-source supplement, which delivered a 76% reduction in peroxidation markers. Similar results were reported in a test-tube study by Levin and Mokady²⁶.

This lack of antioxidant ability is bad enough in itself -- suggesting, as it does, that the synthetic β -carotene administered to the ATBC and CARET smokers could not have helped them -- but further investigation suggests a more chilling conclusion. First is the possibility that synthetic β -carotene supplements may actually deplete the body of the natural cis isomer. This is because both forms of β -carotene use the same absorption pathway, which only allows a limited transport of this carotenoid at a given time¹⁵, so that large-dose synthetic β -carotene supplements may actually inhibit absorption of the natural cis-form of β -carotene. Ironically, in fact, the liver appears to transport the trans form more efficiently than the cis isomer¹⁸, so that taking in one unit of synthetic β -carotene might prevent more than one unit of the

active antioxidant isomer from being absorbed. To understand the problem, think of a group of prank callers tying up telephone lines of an organization, preventing legitimate callers from making contact. Now imagine that there are more pranksters than callers with real reasons for trying to get through. Now imagine that the lines being tied up are used by 9-1-1 emergency operators ...

Some have speculated that the absorption inhibition issue could be even more serious, since an overload of synthetic β -carotene might be expected to also reduce uptake of other carotenoids such as lycopene, lutein, and α -carotene. One preliminary report on the ATBC subjects paradoxically reported that lutein was, indeed, depressed in those receiving synthetic β -carotene, but that some other carotenoids were actually increased in serum¹⁹. Several other reports, however, have shown no association between intake of the artificial supplement and levels of any carotenoid other than β -carotene itself^{23, 24, 25}.

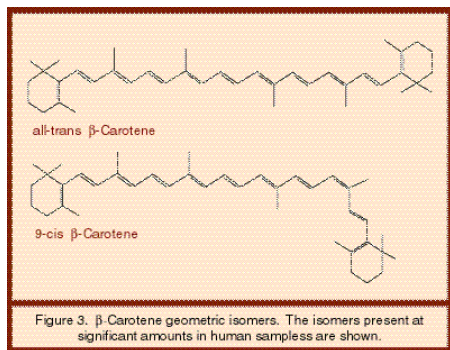
Artificial β -carotene Damages Genes

An even greater reason to stay away from the use of synthetic β -carotene supplements was given by a recent study which found that, while both natural and synthetic β -carotene protected immune cells from damage by gamma radiation, synthetic β -carotene itself caused chromosome damage in these cells, with the number of damaged cells increasing with the dosage¹⁷! By contrast, natural β -carotene caused no such spontaneous damage. In the same study, natural β -carotene protected cells from DNA cross-linking induced by the antibiotic mitomycin C, which the synthetic form was not reported to do.

A small trial reported just before the ATBC alarm sounded shows that these are not just theoretical concerns. The trial was conducted patients with precancerous cells in their stomachs. It assigned the patients to receive one of three supplements: natural β -carotene, synthetic β -carotene, or a placebo. When the researchers looked at the results, they found that only the natural supplement had reduced the abnormal cellular development²¹.



Thus, the synthetic β -carotene used in ATBC, CARET, and most β -carotene supplements available on the market appear to simultaneously inhibit the absorption of beneficial *cis* β -carotene, and to be themselves possible carcinogens. In sum, **synthetic β -carotene supplements may be worse than useless: they may actually be harmful**, especially to high-risk populations like those in the large trials. The only reason we can see for the use of the artificial supplement in CARET



and ATBC is its low cost; in retrospect, as a letter to the New England Journal of Medicine put it, the use of this supplement "is neither hard to understand nor easy to forgive."²²

Choosing the Right β -Carotene

To recap: there are many reasons to believe that the results of the large-scale trials of β -carotene were the results of flawed design, and that we should trust the extensive epidemiological, animal, and cellular evidence that **β -carotene can prevent the development of cancer**. The evidence strongly suggests that a central flaw in the ATBC and CARET trials may have been the use of synthetic (all-*trans*) supplements. Fortunately, the problem of synthetic β -carotene is not inescapable: while most multivitamins, ACES combinations, and stand-alone β -carotene supplements still use the artificial molecule, **supplements are available which contain natural β -carotene exclusively**, usually derived from marine algae. These supplements deliver β -carotene in the natural form, with the vital *cis* isomers present. But we have to learn from the trials' other mistakes as well. It is important to **ensure that you are also taking a spectrum of antioxidants** with your β -carotene, especially vitamins C and E. It may also be important to **avoid excessive consumption of alcohol** -- a wise policy in any case. And, most important of all -- for your own sake, **quit smoking**.



IS YOUR BETA CAROTENE TOXIC?

The version in your multivitamin may be hazardous to your health!

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Did you know?

Your body can only absorb fat-soluble vitamins (like CoQ10, beta-carotene, tocotrienols, and lycopene) when they're dissolved in fat. To get maximum benefits make sure there's a little fat in the meal when you swallow the pill-- and never take them on an empty stomach!

The Orthomolecular Revolution: New Salvos

With the breakneck speed of research into nature's pharmacy, radical new discoveries seem to appear almost every day.

Developments are occurring so quickly that we only have space in this issue for a brief summary of a few of them. But be warned: this new science is on the razor's edge of research and development. Waiting for official recognition of the value of these dietary substances by government agencies or medical orthodoxy gives many people a reassuring sense of certainty, but it also means a long wait. Over thirty years since Linus Pauling first drew the attention of millions to the protective powers of vitamin C, the US Food and Nutrition Board has just raised its Dietary Reference Intakes (DRIs) -- to a whopping 90 mg daily for men, and 75 mg daily for women. It is up to each of us, as individuals, weigh the evidence, and decide whether we will wait for a paternalistic seal of approval, or embrace

Omega-3 fatty acids are already famous for their ability to **control inflammation**¹. They do this because of their effects on local cellular "hormones" called **eicosanoids** (eye-KOSS-ah-noids). Some ("bad") eicosanoids promote inflammation, while other ("good") eicosanoids serve a potent anti-inflammatory function. Thus, our health depends in large part on the body's balance of "good" and "bad" eicosanoids. This balance, in turn, depends on two factors: **which EFAs** (omega-3 and **omega-6**) are available as building blocks for making eicosanoids, and **which enzymes** are used to process those EFAs. Like a factory which can make pasta using one of two **raw materials** (either whole wheat or white flour), and shape it into spaghetti, manicotti, or pasta shells depending on **what machinery** is used to process it, the body's eicosanoid factories work with raw materials (EFAs) and processing equipment (enzymes) to make different finished products ("good" and "bad" eicosanoids). By keeping the machinery busy with the right raw materials (the EFA input from your diet and supplements), you can put those factories to work *for* you instead of *against* you, making more "good" and less "bad" eicosanoids, thus preventing inflammation before it starts.

One of the most powerful families of pro-inflammatory eicosanoids are the **leukotrienes**, such as **leukotriene B4 (LTB4)**, which are formed from omega-6 EFAs using the enzyme **5-lypoxygenase (5-LOX)**. The eicosanoids produced by 5-lypoxygenase are the trigger for the pain flareups in **rheumatoid arthritis (RA)**^{2,4}, causing untold suffering to millions. Leukotrienes are also involved in other inflammatory diseases, including **asthma, psoriasis, and ulcerative colitis**⁶. Most omega-3 supplements -- like the **EPA and DHA in salmon oil** -- are unfortunately not very effective in stopping the formation of leukotrienes, because they aren't good at tying up the lypoxygenase enzyme "machine".

Green mussel extract was 160% as effective as EPA and over three times as effective as evening primrose oil.

The medical establishment's mainstay for inflammation has for many years been the **nonsteroidal anti-inflammatory drugs (NSAIDs)**, like **aspirin, ibuprofen [Advil®], and naproxen [Anaprox®]**. These drugs do bring short-term relief to many, but at a cost in side effects which may include **gastric ulcers, kidney and liver damage**, and (with a cruel irony) **long-term damage to the joints**. These drugs' pain-relieving and ulcer-inducing powers are *both* due to the fact that they nonselectively block the formation of nearly *all* eicosanoids -- "good" and "bad." Thus, at the same time that they are blocking the formation of the eicosanoids that trigger inflammation, they simultaneously prevent the body from making the eicosanoids which help maintain the lining of the stomach.

These drugs have no direct ability to inhibit 5-LOX, the enzyme responsible for creating LTB4, the flareup-triggering leukotriene. In fact, in some asthmatic patients, **NSAID therapy can actually cause a new form of asthma marked by increased leukotriene production**⁵! The pharmaceutical industry is now racing to make new drugs which inhibit 5-LOX, LTB-4, or the receptors for this master inflammatory messenger. But now a new EFA source stands ready to revolutionize the use of omega-3s against inflammation.

The fatty acid extract of the Australian **green-lipped mussel (*Perna canaliculus*)** provides a rare blend of unique omega-3 fatty acids, most notably the tongue-twisting **eicosatetraenoic acid (ETA)**, which **powerfully and selectively blocks the formation of pro-inflammatory eicosanoids**. This EFA acts like a **laser-guided "smart" missile against inflammation** because of its powerful, *selective* ability to **keep the 5- and 12-lypoxygenase enzyme machinery busy**, and thus prevent the formation of leukotriene B-4. Researchers at the Queen

The Orthomolecular Revolution:

New Salvos

Elizabeth Hospital showed that **the fatty acid extract of the mussel powerfully inhibits these enzymes**, preventing the formation of LTB4 and other “bad” eicosanoids. Scientists at Australia’s Queensland University found that, of 37 products tested on animals, **this extract had the most powerful anti-inflammatory effects**⁷. In fact, as compared to other EFA

oils, the fatty acid extract of the **green mussel was 160% as effective as EPA and over three times as effective as evening primrose oil -- using just one percent of the required dose of other EFA oils!** Another green mussel product, which is a crude extract not standardized to the fatty acid content or extracted carefully to protect the crucial omega-3s, had little or no effect on inflammation. And a recent double-blind trial⁸ reported **improvements in 76% of RA patients taking the green mussel lipid extract**, using measures such as **morning stiffness, grip strength, pain scales, and joint functionality**.

And the dangers of the 5- and 12-LOX enzymes don’t stop with arthritis pain. Other **products of the LOX machinery are used by many cancer cells to protect themselves from apoptosis** (the body’s suicide mechanism for damaged or rogue cells)¹¹, **to siphon off healthy cells’ blood supply** (through **angiogenesis**)⁹, and **to spread to other parts of the body (metastasis)**¹⁰. Since it is a potent inhibitor of these enzymes, it is not surprising that **Australian scientists announced that the lipid extract of the green mussel kills cancer cells in test tubes**^{11a}. All this suggests that the extract may yet prove to be powerful nutritional support against this most insidious of diseases.

Phytosterols (plant sterols and sterolins) are fatty components of plants which are stripped from the diet by food processing and cooking, and which support

human health in many ways. Various combinations of sterols and sterolins have been shown to **improve symptoms of benign prostatic hypertrophy (BPH)**¹², improve some **autoim-**

m u n e disorders^{16, 17}, **lower cholesterol** when taken with a meal¹⁸, and to possibly prove helpful in **type II**¹⁹ and **type I**²⁰ **diabetes**. Women who get more phytosterols in their diet are less likely to develop breast cancer²¹, and phytosterols **slow the growth and spread of human breast**¹³, **prostate**¹⁴, and **colon**¹⁵ **cancer cells** in animal and test tube models. They have **anti-inflammatory powers**²³, and are powerful **immune modulators**²¹.

Unfortunately, **most phytosterol products utilize a poor extraction process** which reduces their bioavailability and introduces an unnaturally low ratio of sterolins to sterols. The most readily available such product begins with a sterol extract from one source (pine oil), using an extraction method which almost completely removes the natural sterolins, and then *adds in* sterolins separately from soy. The resulting amalgamation has *one hundred times* as much sterol as the more fragile sterolins, **a ratio much lower than is found in whole foods**: natural sources contain a 10% or better content of sterolins, with some foods providing as much as 80% sterolins by weight²⁴. Such low ratios become even worse upon ingestion, because **the body absorbs two to five times less sterolin than it does sterol**²⁴, so that a 100:1 sterol-to-sterolin mixture may actually provide as unbalanced a ratio as 200:1 or 500:1 in the body -- **ratios far lower than those required for optimal immune enhancement**²¹.

These products are not useless, but they do not live up to the potential of a more natural phytosterol supplement. **A ratio of one milligram of sitosterols to 5-10**

milligrams of plant sterols is optimal, according to Dr. Karl Pegel of the University of Natal, one foremost authorities on the role of phytosterols in human nutrition. These ratios can be achieved by using a **solvent-free, whole-food plant extraction process** from sprouts. Studies performed at Pegel’s institution affirm the **higher bioavailability of whole-food, sprout-extracted phytosterols**: such sources have a **bioavailability of 80% or more**, as compared to a much lower bioavailability for other extraction processes. Reports on the bioavailability of unnaturally isolated phytosterols suggest that their absorption may be as little as 5%²⁵!

Coenzyme Q10 is a powerful fat-soluble antioxidant which **protects membranes from free radicals and recycles the vitamin E complex vitamins** (tocopherols and tocotrienols) to their active antioxidant form after they are put out of commission in fighting free radical attackers. More importantly, it is **absolutely necessary to the body’s ability to produce cellular energy in the mitochondria** -- the power plants of every cell in your body. Without CoQ, cells cannot produce the energy they need to perform their functions, be they immune, brain, or muscle cells. CoQ is most well-known for its use in nutritional support for heart disease -- especially **congestive heart failure**. **Thirty-four controlled trials**, as well as a multitude of animal experiments and open trials, attest to its power to rejuvenate the aging heart²⁶.

To get results from CoQ, however, one must not just swallow a pill, but **get the CoQ10 into one’s system and into the mitochondria** where it is needed. Research by Karl Folkers and Peter Langsjoen established early on that a key plasma level of **2.5 micrograms per milliliter** is required to see results in advanced cardiomyopathy^{27, 28}. But achieving this optimal level is harder than you might

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think. Thus, some clinical trials using as much as **200 mg of dry capsule CoQ10 daily have failed to raise levels to this key therapeutic threshold**^{29a}. Another study^{29b} showed how much variation there can be between individuals: subjects were administered **300 mg CoQ daily as dry capsules**, and their plasma levels tested. *On average*, this brought CoQ levels to 2.76 micg/mL, which is in the optimal zone; however, **the plasma levels of individual subjects varied wildly**: while one subject taking this high-dose dry capsule CoQ increased his plasma levels to 5.44 micg/mL, **another subject only achieved plasma levels of 1.38 micg/mL!**

This low absorption is due to way the body must handle fat-soluble nutrients like CoQ. As a fat-soluble compound, CoQ10 cannot pass directly into the blood, but must first be dissolved in some fat. The dissolved CoQ is then absorbed with the fat, using **micelles**, which are tiny absorption “packets” formed from bile. But because of the **high melting point** (48°) and relatively **poor solubility** of CoQ, and because **the digestive system destroys some of the CoQ10** along the way, it is difficult to ensure that much of the CoQ in dry capsules will actually be dissolved, even when taken with a fatty meal. Further, because **individuals vary in bile secretion and intestinal absorption**, even well-dissolved CoQ may not be taken up adequately by many.

The best way around these problems is to **enclose the CoQ10 in tiny microspheres called liposomes**. Liposomes are microscopic membranes composed of two layers of **phospholipids** (like **phosphatidylcholine (PC)** and **phosphatidylserine (PS)**). They are similar to micelles, and also not unlike a simplified version of the membrane of the cell. Because they are soluble in water, liposomes do not require dissolution in fat, bile secretion, or micelle formation; instead, **liposomes pass almost directly**

from the gut, through the intestinal wall, and **into the blood, bringing their CoQ payload with them**. Liposomes also protect much of the CoQ10 from being lost to digestive juices.

Just how effective are liposomes at getting CoQ10 where it has to go? Research performed by Dr. William V. Judy³⁰, veteran CoQ10 researcher^{31,32}, found that in just one month, **90 mg a day of liposomal CoQ10 can raise plasma levels to 2.64 micrograms per milliliter** -- levels **barely achieved using 600 mg of dry capsule CoQ daily** for eleven days^{29c}, and **not achieved in six months** in some studies using 200 mg^{29a}! The liposomal system not only worked much better than dry capsules, but also **better than 90% of other softgel CoQs**: better than softgels made by simply dissolving CoQ in oil, and even **better than a micronized, hydrosoluble CoQ gel capsule formula**. Clearly, **liposomal CoQ helps ensure that you get the full benefits of CoQ10**.

Although new to Canadian health consumers (it was first introduced to the Canadian market in September of 1998), **Pantethine** has been used in Italy, the United States, and Japan since the 1980s, primarily as a way to safely and effectively support healthy cholesterol balance. **Pantethine is not the same as pantothenic acid** (vitamin B5), but they are related: **Pantethine is the active coenzyme form** of this vitamin. The body doesn't actually use pantothenic acid itself to do *anything*; instead, it must *convert* pantothenic acid into **Pantethine** to unlock its potential. **Pantethine**, in turn, is **the active part of Coenzyme A (CoA)**. CoA is everywhere in the body, and is involved in many vital biological processes, from **energy production and fat metabolism**, to **liver detoxification** and the body's **control of cholesterol synthesis**. It's an exciting molecule which plays a key role in human health.

The trouble is that **the body's ability to make Pantethine from vitamin B5 is very limited**. Each person's genes (and, to

a lesser extent, diet) places a “ceiling” on how much **Pantethine** they will make at any given time. But many people's **internal Pantethine-making machinery runs at far too low a level for optimal health**. The most extensively-researched example of this is in **Pantethine's effects on cholesterol**. No amount of pantothenic acid has significant impact on cholesterol levels, precisely because the amount of **Pantethine** a given person makes from B5 is held under tight genetic control. Thus, some people's **Pantethine** levels are already high enough to keep their blood lipids in healthy balance, and taking more B5 doesn't change this fact; while others don't produce enough **Pantethine** to help support cardiovascular health -- and taking more B5 doesn't change that, either. Fortunately, if you have a **Pantethine-making “deficiency,”** you can **add more Pantethine directly into your system** in the form of a **Pantethine** dietary supplement, thus correcting for an unhealthy low steady state level.

A wealth of clinical evidence^{33-47, 51} shows that **pantethine supplementation supports healthy cholesterol balance**. In adults^{33-46, 51} and children^{40, 47}, in all tested forms of dyslipidemia^{34, 42, 44, 45, 51} (**Pantethine** has not been tested against the rare **Fredrickson's Type I and V** subgroups, which develop pancreatitis rather than cardiovascular disease), in dialysis patients^{35, 41} and diabetics^{34, 35, 38, 45, 46}, as well as survivors of previous heart attacks⁴³, **Pantethine** has proven itself to be a safe and effective modulator of cholesterol levels. The clinical trials have consistently reported that subjects taking **Pantethine** have **lower total cholesterol, LDL, and VLDL**, but **higher HDL**; further, **Pantethine lowers triglycerides**, a lipid risk factor which is coming to the forefront of health concern. Patients in one double-blind, controlled crossover trial⁴⁴ experienced **decreases of 13.5% in total cholesterol and LDL**, while their in **HDL levels rose by 10%**. While taking **Pantethine**, patients also had **decreases of**



Behold...

the power of the leaf

13 to 30% in triglycerides, depending on what sort of lipid disorder they had. The other trials have reported similar results.

Pantethine also supports heart health in other ways. It **makes LDL cholesterol less subject to attack by free radicals** mediated by copper⁴⁸. This is important, because we now know that LDL is much more likely to be deposited in the arteries when it becomes oxidized. **Pantethine** also **changes the EFA balance in platelets, increasing their omega-3 content and lowering their omega-6**^{50, 51}; this may also be important, because omega-6 EFAs in platelets are more likely to cause **blood clots (thrombi)**, thus triggering a heart attack or stroke, while omega-3s tend to block this tendency⁵².

Science is acquiring knowledge at an accelerating rate: today, our store of basic biomedical knowledge is *doubling* every three-and-a-half years. **Advanced Orthomolecular Research** is committed to keeping you up to date on the newest developments, and of translating new discoveries about natural substances into usable nutraceutical technology.



Each capsule of Natur•Leaf™ contains 300mg of natural plant sterols and sitosterolins, plus 50mg of enzymes. The 300mg sterols/sitosterolin blend comes from *whole plant sprouts*, which have been ground and freeze-dried immediately after harvesting at a hydroponics farm in South Africa. **All the nutrients of the plant sprouts are retained in the end-product**, with a guarantee by Natal University of 80%-90% bioavailability. So, in addition to the sterols and sitosterolins, the capsules contain vitamins, minerals and other *phytochemicals* associated with the young plant sprouts.

The ratio of the sterols to their glucosides (sitosterolins) in Natur•Leaf™ is about 6:1, derived from a variety of sprouts with natural ratios varying from 10:1 to 4:1. This ratio is important to understand, because it is what is **found in nature**, with no introduction of outside glucosides (sitosterolins) to sterols. Other sterol/sitosterolin products are derived from a chemical extraction process which eliminates or destroys the glucosides, thus requiring an outside glucoside source to be added to the product.



Did you know?

Processing method affects whey protein quality. **Ion-exchange** extraction, although yielding a high percentage of protein, also reduces the amount of important immune-enhancing peptides (such as **lactoferrin** and **glycomacropeptides**) and the highest-quality protein fraction (**alpha-lactalbumin**). **Ultrafiltered** wheys preserve more of these important components intact. **Know what your buying!**



Whole Food Extract •

Optimal Ratio

High dosage strength •

High Bioavailability

Replace phytosterols lost to food processing •

Broad Spectrum of Sprout Sources

To the best of our knowledge, there is no other sterolin product on the earth which is more concentrated in its sterol/glucoside ratio than Natur • Leaf™, and which offers such a high percentage of bioavailability.

Holistic International is always one step ahead of the competition when it comes to new and innovative products. We were the first to introduce to the Canadian market such products as Pantethine, SAMet and Glucosamine Sulphate. For more information on such ground-breaking products, give us a call and stock your shelves with tried and true quality!

Green Mussel Lipid Extract

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Q: Another company has been spreading around copies of a flyer on colostrum. It makes some pretty wild claims! Can you comment?

A: The flyer makes some good points about quality issues in colostrum, but also spreads a great deal of misinformation, and makes comments which apply to other colostrum sources, but not to ours. The raw material for our **All-Life Colostrum** and Jarrow Formulas' **Colostrum Specific** comes from a North American source. This source provides us with colostrum from cows which are **free-range fed, not exposed to rBGH or BST, are not routinely treated with antibiotics**, etc. Further, the raw colostrum is **processed under cGMP conditions**. In these respects, our colostrum is produced and processed using methods identical to those in New Zealand-sourced material.



However, there is one key difference between the colostrum used in our product and that from New Zealand: namely, the **superiority of the colostrum** produced at more extreme latitudes. Harsher winter conditions cause cattle to produce greater levels of immune-supporting compounds than they do in more temperate zones. As a result, **All-Life Colostrum contains 25% more immunoglobulins (Igs)** than are typically present in New Zealand colostrum. Since boosting our levels of such immune-supporting proteins is the entire point of taking a colostrum supplement, this makes colder-climate colostrum the clear choice for supporting health.

The raw material is **flash-freeze-dried to ensure potency**. It is simply false to claim that freeze drying causes protein denaturation; in fact, the exact opposite is the case! It is *heat*, not cold, which causes protein denaturation; freeze-drying is the preferred way of drying everything from in backpacking foods to samples used in scientific studies for exactly this reason. **Freeze-drying is done precisely because it guards intact *more* of the immune-enhancing proteins from denaturation**, and preserves more of the essential components of colostrum, than does drying using either heat long drying periods. Likewise, **we do not use any chemical solvents in the processing of our colostrum**. Since heat, long drying periods, and solvents are the only ways other than freeze-drying to provide a properly dried product, this makes a freeze-dried, high-quality, North American product the clear choice for potency -- from the dairy all the way to you.

Q: How do you pronounce "Jarrow"?

A: Good question! The "Jarrow" in "Jarrow Formulas" and "Jarrodophilus" does *not* refer to the sticks used to throw the *I Ching*, but to the founder of the company: Jarrow Rogovin. Mr. Rogovin pronounces his name with a hard "J," not a soft "Y."

We want to hear from you!
Send all questions to:

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Don't forget to include your name and location.

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- Supports healthy insulin function
- Reduces enzyme warping by sugars (AGEs)
- Helps with blood sugar balance



The satisfaction of a pasta meal... and the nodding off three hours later. The rush of a quick sugar fix ... and the crash when it's all burned up. The bulging waistline. The stern look from your doctor. The craving for carb.

Blood glucose is needed to fuel our brains and provide easily accessible energy. But carb is like a drug: it's addictive, it's got side effects, and it's got a real withdrawal syndrome. The mills of the agrobusiness have pumped us full of high-glycemic carb for decades, until we've become sugar junkies, strung out on carb.

Glucose Optimizer is formulated to deliver nutrients and herbs which help fight the sugar fix.

A wide variety of Jarrow Formulations™ products are available through Holistic International™. For more information refer to this years catalogue and see what else they've got in store!



HEALTH ON THE INTERNET

Finding your way or stuck in the maze?

Check out the next generation of cutting-edge supplements...

Lyprinol

A wonder from the sea: a rare omega-3 fatty acid supplement from the Australian **green-lipped mussel**.



Natur • Leaf

Phytosterol supplement with natural ratios of **sterols and sterolins**. Very well-absorbed.

Maxxum 4

Our best multivitamin/multimineral, with a full spectrum of antioxidant carotenoids. Includes **natural beta-carotene!**



Think-Well

Hard-to-find “**smart nutrients**” like **Choline**, **Alfoscerate**, **vinpocetine**, **huperzine A**, and more!

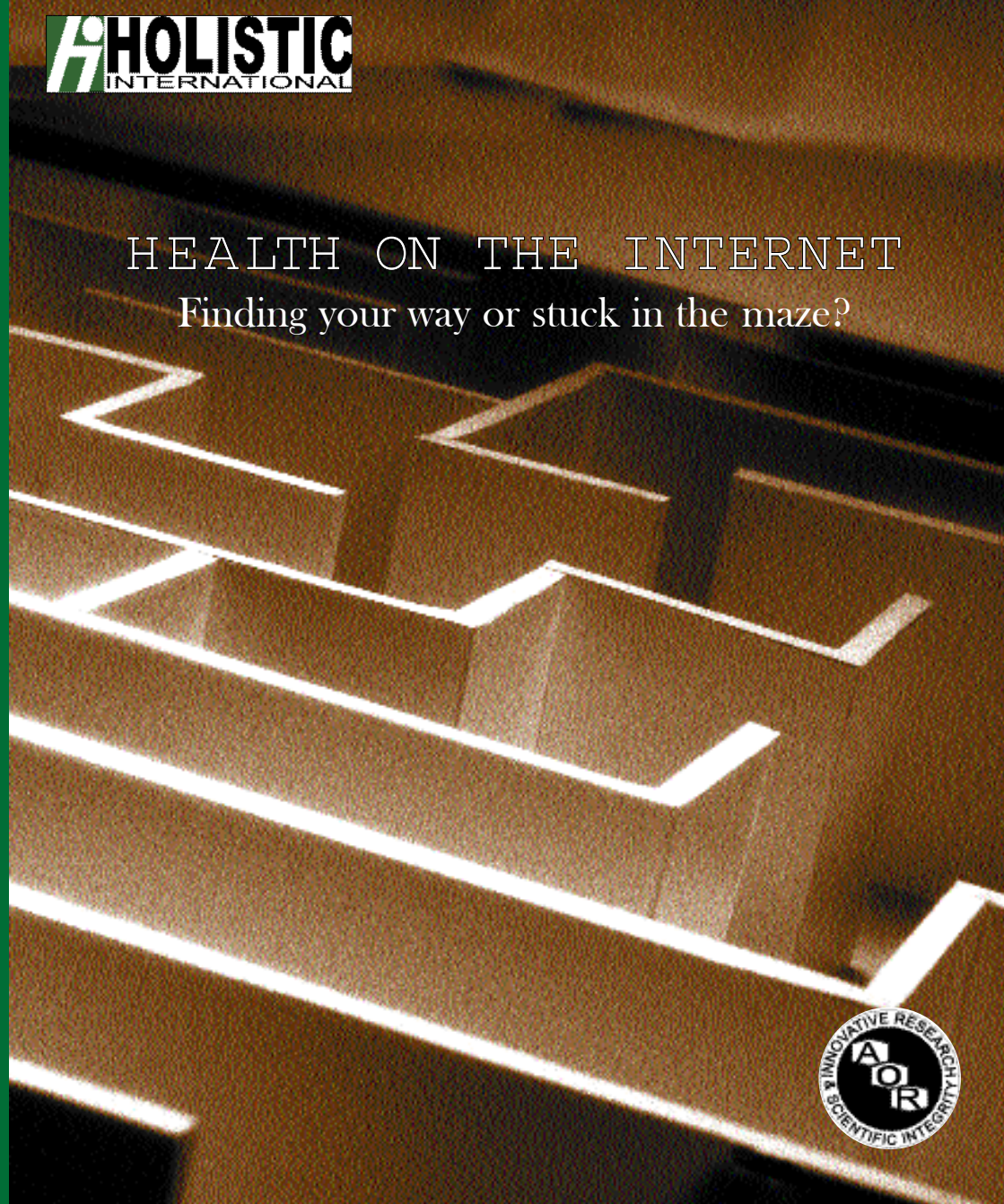
Q-Sorb

Pharmaceutical-grade CoQ10 in a **liposome delivery system**. Maximum absorption for maximum results!



Acti-Cyclase

Contains **forskolin**, of a potent **hormonal response modulator**. Decades of research and Ayurvedic tradition.



Access to the internet means fast access to an awesome amount of information. The internet opens us up to a new world of free-flowing ideas about health and fitness, unfiltered by official approval from the usual sources: government, the medical establishment, and the media. And just in time: the last decade has seen an explosion in the number of people are looking for new information on health and nutrition.

But the internet's very freedom means that the quality of the information is mixed. The world wide web feeds our information hunger, but the new “marketplace of ideas,” like a grocery megastore, can be overwhelming and hard to navigate; more importantly, it offers a lot more “junk food” information than wholesome fare. Health-conscious people want to know: “where can I get the information that matters most? Where will I find readable, cutting-edge summaries of new research on natural health products -- supplements that can support me in sickness and in health?”

At Holistic International, we're committed to providing just that. We've worked to make www.holisticinternational.com a reliable source of quality information on the most advanced nutritional supplements available.

Cut through the tangles of the web. Find the center of the labyrinth. Visit our site today.



Doctor from the New School

The old health care paradigm is dying. We don't look at our doctors as gods anymore. In the new paradigm, each of us, as an individual, is taking more responsibility for his or her own health. We're eating right, exercising, and taking supplements to keep healthy; we're reading, talking, trying new approaches, and questioning conventional wisdom.



Unfortunately, many of us find that old-school doctors are more of an impediment to this process than a help. Health-conscious individuals need the kind of physician that supports our health pro-actively, rather than waiting until we're sick and pumping us full of drugs. We need doctors who respect our health freedom, and want to work *with* us to maintain or restore our health. Most of all, we want a physician who understands *the healing power of Nature*, and who is keeping up with the cresting wave of research into nutrients and herbs and their role in keeping us youthful, vibrant, and alive.

Holistic International is in contact with a network of such physicians. While we cannot look into the practices of each of these doctors individually, and cannot recommend or endorse any one of them, they have all committed to supporting the health of their patients through safe, natural approaches. If you're having trouble finding a doctor that can really support your health decisions and work with you to bring you to a personal health peak, these physicians are a good place to start looking. Call us at 1-403-250-9997, and we'll help you find some of the integrative physicians -- Naturopathic Doctors, Doctors of Chiropractic, and nutritionally-oriented MDs -- closest to you.



Does your Lipoic Acid love you and leave you?

Lipoic Acid has generated a lot of excitement, and with good reason: it's an incredibly powerful antioxidant (the head of the body's antioxidant network) which detoxifies the liver, improves insulin function and blood sugar levels, and makes old mitochondria (cellular "power plants") act young again. The good news is, it's quickly and efficiently absorbed into tissues; the bad news is, studies show that it's just as quickly flushed back out again, leaving you back where you started from in as little as an hour and a half!

There's two solutions to this problem: take your lipoic acid six to ten times a day, or take our new **Thiotene SR** formula. **Thiotene SR** is a true sustained-release lipoic acid, providing continuous protection over a six hour delivery period: a real commitment instead of a "two hour stand."

• Pharmaceutical sustained-release system.

• Pharmaceutical-grade raw materials.

• Higher dosage at a great value.

