



Internal Beauty Pill? Sunscreen in a Pill?

The World's Best Kept Health Secret:
NATURAL ASTAXANTHIN



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Internal Beauty Pill? Sunscreen in a Pill?



Although beautiful, the sun causes severe damage to unprotected skin.

Who would ever think that you can take a pill and it would make you more beautiful from the inside out? Or that this same pill could help protect your skin from UV damage and sunburn? It seems incredible, but there is strong evidence that Natural Astaxanthin can do both. Actually, the two are closely related; the skin is damaged over time by extensive and ongoing exposure to the sun's harmful rays. These ultraviolet rays can cause premature aging of the skin, wrinkles, dry skin, age spots and freckles. By preventing UV damage, skin can be protected from these conditions. And there is evidence that Natural Astaxanthin not only prevents UV damage from occurring, but may actually help to reverse these external signs of aging from the inside out.

Natural Astaxanthin has many great proponents among the medical community. One of them is probably the world's most famous dermatologist, a best-selling author named Dr. Nicholas Perricone, MD. Dr. Perricone has written several books, a few of which reached best-selling status, and one of which landing him at the #1 spot on the New York Times' Bestsellers List. He is a true believer in Natural Astaxanthin—he specifies that people should eat foods that contain the natural variety rather than foods with synthetic Astaxanthin like farm-raised salmon. Perricone's best selling book to date is titled "The Perricone

Promise: Look Younger, Live Longer in Three Easy Steps." In this book he devoted three pages to educating his readers about Natural Astaxanthin. In his most recent book, "The Perricone Weight-Loss Diet," he also extols the virtues of Astaxanthin. He calls it a "Superstar Supplement." He lists a series of benefits for Astaxanthin, two of which are relevant to this chapter: "It provides wrinkle reduction by internal supplementation...It reduces hyperpigmentation (better known as age spots)" (Perricone, N, 2006). On Oprah, Dr. Perricone called Astaxanthin a wonderful anti-inflammatory and antioxidant that "gives you that beautiful, healthy glow."

Dr. Perricone credits Astaxanthin's superior role as an antioxidant to its unique role in protecting the cell membrane. He cites evidence that it has an ability to protect and rejuvenate the skin as an internal beauty supplement. And Dr. Perricone is not the only fan of Astaxanthin from the conventional medical community. Another doctor, although perhaps not as famous as Dr. Perricone, has been raving about Natural Astaxanthin based on his own personal experience.

His name is Dr. Robert Childs, MD. Dr. Childs has been publicly talking about Natural Astaxanthin's many benefits in radio and TV appearances as well as in magazine articles. And it's very interesting to note that he's doing this publicity solely because he's a true believer in Natural Astaxanthin; he receives no compensation from anyone for his appearances. Dr. Childs' personal experience with Natural Astaxanthin is fascinating: Briefly, he was born and raised in Honolulu, Hawaii and was always extremely sensitive to the sun, until he started supplementing with Astaxanthin.

After taking Natural Astaxanthin, Dr. Childs found that he could go out in the midday sun for four hours without burning, as compared to before using Astaxanthin, when he would burn in about a half hour in the intense Hawaiian sun. Dr. Childs says that "BioAstin [a brand of Natural Astaxanthin] literally changed my life, I am outdoors whenever and for as long as I like. For myself, the increased sun tolerance has been quite remarkable." He also found that Astaxanthin helped him with stiffness and soreness in the mornings: "Coincidentally, within a few weeks after I starting taking Astaxanthin, I noticed that it was so much easier to jump out of bed in the morning. The usual stiffness and occasional soreness that would take 15 to 30 minutes to resolve was gone. I didn't think

The “*Hollywood Buzz*” on Natural Astaxanthin has Already Started

Medical doctors aren't the only ones raving about Natural Astaxanthin's skin health benefits. Famous actresses and models are also starting to buzz about Natural Astaxanthin as well. For example, England's second largest circulation newspaper, "The Daily Mail," reported a story in 2011 about Academy Award winning actress Gwyneth Paltrow and Super Model Heidi Klum both using a brand of Hawaiian Astaxanthin called "Royal Green" to help their skin. The article was titled "*Extended Life Pill: 'Miracle Supplement' Promises to Fight the Signs of Aging.*" The article stated that Royal Green Hawaiian Astaxanthin sold out within four hours of being offered for sale in the UK. The article lists several benefits for skin from Natural Astaxanthin use:

- *Fights wrinkles*
- *Improves skin elasticity*
- *Reduces visible signs of UV-aging within four to six weeks of use*
- *Maintains a youthful appearance*
- *Reverses premature signs of aging*
- *Reduces the risk of skin cancer*

Besides extolling these significant skin health benefits, the article also pointed out a few of the other benefits of Natural Astaxanthin including reduction of joint and muscle pain and improved immunity. As of late 2011, this story about Gwyneth Paltrow and Heidi Klum using Natural Hawaiian Astaxanthin had only been publicized in the United Kingdom; but as the "world's best kept health secret" continues to leak out, this publicity is sure to surface in the United States and many other countries across the world.

about it much at the time, but looking back at it now, I realize that my physical body regained the smooth, painless functions that I enjoyed in my thirties, almost twenty years ago. Lastly, some of the older surgeons I work with who have confided in me their own "aches and pains" have tried BioAstin themselves and been so amazed that they are now recommending it to their patients." (You can find Dr. Childs' complete testimonial in Chapter 13.)

Why are doctors, scientists, actresses and super models talking about this "Miracle Supplement" that fights the signs of aging? Why is one of the world's most famous dermatologists extolling the virtues of Natural Astaxanthin in his books and on the Oprah show? And why would an MD who is hyper-sensitive to sunburn state that Astaxanthin "changed his life"? If it were only the actresses and models talking, one might think that this was some sort of Hollywood hype. But traditional Medical Doctors believe in hard scientific research as a basis for their opinions and recommendations, and as you've probably already deduced, there is already hard research that Natural Astaxanthin can improve skin appearance and protect from UV damage—from the inside out!.

Internal Sunscreen

In groundbreaking clinical work for which a patent was awarded, Cyanotech Corporation funded a study to test the potential of Natural Astaxanthin as an internal sunscreen.

The skin was tested before supplementation began to see how much UV light was needed to cause erythema (reddening of the skin, a.k.a. sunburn). Then, subjects supplemented with 4 mg of Natural Astaxanthin per day for two weeks. After the two week supplementation period was over, the subjects once again underwent the skin reddening test. The pre-supplementation and post-supplementation scores were then compared. The result was that in only two weeks at a standard dose of just 4 mg per day, there was a statistically significant increase in the amount of time necessary for UV radiation to redden the skin. This result is particularly promising because Astaxanthin has a cumulative effect in the body—it builds up in the organs over time. Two weeks is a relatively short time for the Astaxanthin to concentrate in the body's largest organ, the skin. Yet this study proved that in just two weeks Natural Astaxanthin was already working as an internal sunscreen (Lorenz, T, 2002).

This study did not investigate the mechanism of action for Astaxanthin's abilities as an internal sunscreen, but the answer may not be as complicated as one might think. Sunburn is actually an inflammatory process. When the skin becomes inflamed by exposure to UV light, the inflammation becomes visible through reddening. This is not too different from some other forms of inflammation where the outward appearance manifests as reddening. Swollen ankles, inflamed cuts and abrasions and arthritic hands can all appear red from inflammation. So when our body's largest organ, the skin, turns red, we know that inflammation has taken place. The exact inflammatory pathway or pathways that are being controlled by Astaxanthin's prevention of sunburn are not known; yet it is almost certain that Astaxanthin's anti-inflammatory action is to thank for its action as an internal sunscreen.

There have been animal studies that lend further evidence to Astaxanthin's internal sunscreen indication. Way back in 1995, a study was conducted on special hairless mice to test the protective effects of Astaxanthin, beta carotene or retinol against ultraviolet light. From birth the mice were fed different diets containing combinations of the three substances, the substances alone or a control diet with none of the three substances. After four months, half of each group was exposed to UV light, at which point three markers for skin damage were tested. After irradiation, Astaxanthin alone or in combination with retinol was remarkably effective in preventing photoaging of the skin as measured by these markers (Savoure, et al, 1995).

In rat kidney fibroblasts, addition of Astaxanthin demonstrated superior protection against UVA light-induced oxidative stress compared to lutein and beta carotene. In fact, Astaxanthin performed at up to 100 times the strength of beta carotene and up to 1000 times the strength of lutein in two different parameters that were measured (O'Connor, I., and O'Brien, N., 1998).

In a study published in the *Journal of Dermatological Science*, Astaxanthin was tested in-vitro to examine its ability to protect against alterations in human DNA induced by exposure to UVA radiation. Three different components of the human skin were tested, and in all three cases Astaxanthin successfully countered the effects of UVA light and prevented damage to the DNA (Lyons, N., and O'Brien, N., 2002).

Astaxanthin can also help protect the skin from UV damage when applied topically. A study on hairless mice demonstrated Astaxanthin's topical benefits. The hairless mice were separated into three groups: 1) A control group, 2) a group that would receive UVB radiation after which they would have plain oil that did not contain Astaxanthin put on their skin, and 3) a third group that would receive UVB radiation, after which they would have Astaxanthin in oil put on their skin. The UVB radiation was continued for eighteen weeks to simulate photoaged skin. The results indicated that Astaxanthin reduced wrinkles when compared to the irradiated group that did not have it applied to their skin. And the collagen in the skin in the Astaxanthin treated mice appeared much younger, similar to mice of the same age that had never been exposed to radiation. The study concluded that Astaxanthin can significantly prevent UV induced collagen degradation and the formation of wrinkles. "These results suggest that topically applied astaxanthin, which scavenges singlet oxygen effectively, can play an important role to protect the skin from various photodamages such as lipid peroxidation, sunburn reaction, phototoxicity and photoallergy

induced by singlet oxygen.”

The same study examined another benefit from Astaxanthin that is a very marketable one for many countries in Asia. There are a tremendous amount of products known as “skin whiteners” that are sold in several different countries, primarily in East Asia. These products are designed to reduce melanin, the substance that can deposit in the skin excessively and cause freckles, age spots and skin staining. This study examined Astaxanthin’s ability in-vitro to reduce melanin. Astaxanthin was found to decrease melanin production by 40%. This result is superior to three other substances that are commonly included in topical formulas as whitening agents (Arakane, K, 2001).

Landmark Clinical Trial: Natural Astaxanthin as an Internal Beauty Pill

So we’ve seen that Astaxanthin can protect hairless mice from UV damage, can decrease melanin production by 40%, and can work as an internal sunscreen in humans in just two weeks. We’ve seen experiments showing how it prevents photoaging and phototoxicity, and how it can help prevent age spots and freckles. Now let’s talk about Astaxanthin as an internal beauty supplement. Actually, each of the studies we’ve already addressed in this chapter lends credibility to Astaxanthin’s potential for “Beauty from Within.” If Astaxanthin taken internally can prevent UV damage, it will certainly make people’s skin look younger and more beautiful over time. And its potential to help prevent age spots and freckles certainly can lead to augmenting beauty. But from a scientific perspective, this is all hypothetical until the question of “whether Astaxanthin taken internally can result in measurable improvements in external beauty” is answered. A placebo controlled human clinical trial measuring specific beauty parameters before and after Astaxanthin use must be conducted to prove this hypothesis.

We’re happy to report that such a clinical trial was conducted with excellent results: In 2006, a landmark US-based human clinical study appeared in the journal “Carotenoid Research.” This placebo-controlled study used 49 healthy women, with an average age of 47. The subjects were divided into two homogeneous groups; the group divisions were based on skin-type, age, and physical build, as well as a pre-trial measurement of skin parameters.

This study ran for a total of six weeks. Twenty one subjects were given placebo pills, while twenty eight supplemented with 4mg per day of Natural Astaxanthin. Skin parameters were measured in each participant at the beginning of the study, at the halfway point three weeks after supplementation began, and finally at the end of the study after six weeks of Astaxanthin supplementation or placebo use. The results of this clinical trial were measured using a variety of methods:

1. Skin Moisture Content was measured using Dermal Phase Meter 9003
2. Skin Elasticity was measured using Dermalab
3. Skin Elasticity and Skin Dryness were inspected by a Dermatologist (in addition to the measurement methods above)
4. Fine Lines and Wrinkles were inspected by a Dermatologist
5. Subjects answered a Yes or No Questionnaire at the end of the study which covered:
 - a. Fine Lines and Wrinkles
 - b. Elasticity
 - c. Roughness
 - d. Dryness
 - e. Moisture Content
6. Skin Surface was photographed and results published within the study

Results Showed Significant Improvements Across the Various Test Methods

Whether measured by established dermatological instruments, dermatologist inspection, self-assessment questionnaires, or by before & after photos, the results were all very positive: Natural Astaxanthin taken *internally* made these women more beautiful *externally*! It may be hard to believe for some people, but there is such a thing as an “Internal Beauty Pill.” A summary of the results include:

- In the self-assessment (questionnaire), over 50% of the subjects taking Natural Astaxanthin rated improvements in all areas!
- Dermatologist assessment found improvements in all areas tested: Fine Lines and Wrinkles, Elasticity and Dryness.
- Dermatological clinical instruments recorded improvements in both parameters tested: Moisture Content and Elasticity.
- Before & after photos showed visible improvements in Fine lines, Wrinkles and Elasticity.

E. Yamashita, 2006: “The Effect of a Dietary Supplement Containing Astaxanthin on Skin Condition”

Previous Research on Internal Beauty

Before the landmark study on pure Natural Astaxanthin as an Internal Beauty Pill, there were three other studies that all demonstrated that Natural Astaxanthin taken internally had a very positive effect on the way people look. The difference was that in each of these earlier studies, Natural Astaxanthin was paired with one or two other nutrients. In each study, researchers combined Natural Astaxanthin with other substances, for example, omega 3 fatty acids or a Vitamin E derivative known as tocotrienols, but the common denominator shared by all three studies was that Natural Astaxanthin was the primary active ingredient in each formula.

The first study was done in Japan. This study combined 2 mg per day of Natural Astaxanthin with tocotrienols (from the Natural Vitamin E family). All the subjects were women with an average age of forty. Measurements of several skin parameters were taken after two weeks and again at the end of the study after four weeks. The results were excellent—after just two weeks, improvements were noted in seven different areas, all closely linked to the study on pure Astaxanthin alone:

- Fine wrinkles
- Moisture levels
- Skin tone
- Elasticity
- Smoothness
- Swelling
- Spots and freckles

At such a low level of consumption and in just two weeks, every aspect of the treated group’s skin was improving. At the end of four weeks, subjects whose skin was characterized as dry at the beginning of the study experienced significantly increased moisture levels, consistent natural oils, a reduction of fine wrinkles and a reduction



Beauty from within with Natural Astaxanthin.

of pimples. On a self-assessment survey, treated subjects reported less swelling under the eyes, improved elasticity and “better skin feeling.” The placebo group showed no improvements over the four week test period, and in general, actually worsened (Yamashita, E., 2002).

The second study was done in Canada, and combined Natural Astaxanthin with two other nutraceuticals, Omega-3 fatty acids and marine glycosaminoglycans. In this study, there were three groups of subjects: The first (Group A) received the active supplement with Astaxanthin, Omega-3’s and glycosaminoglycans, and also applied glycosaminoglycans to the skin. The second (Group B) took only the supplement and applied a placebo cream. The third (Group C) applied the glycosaminoglycan cream, but did not take anything orally. The ages of the subjects ranged from 35 – 55, all female, and there were approximately thirty subjects in each group. The study lasted for twelve weeks.

Unfortunately, this study did not measure every parameter for each group. All parameters including 1) fine lines, 2) skin tone, 3) sallowness, 4) roughness, 5) skin elasticity and 6) skin hydration were measured for Group A, the subjects that used both the supplement and the active cream. Each and every one of these six parameters improved in this group. Additionally, Group A (exclusively) answered a seventeen point self assessment survey about various aspects of their skin’s health before and after the 12 week trial. The regimen met the expectations of

86% of Group A, with general agreement that the regimen was effective in all parameters.

Groups B and C were only tested for two parameters each: Skin elasticity and skin hydration. It was found that Group B (supplement only) had a much better result in skin hydration, while Group C (topical only) had a much better result in skin elasticity. The authors concluded that “Working from the ‘inside out’ represents a new and exciting cosmeceutical approach to supply the skin with biologically active ingredients” (Thibodeau, A., and Lauzier, E., 2003).

A different study design would have been much more useful for our purposes, but in any event this study is further indication that Natural Astaxanthin has benefits as an internal beauty supplement, especially when viewed in relation to the two studies previously discussed. A third study was done in Switzerland that was very similar to the Japanese study with Astaxanthin and tocotrienols. This study focused exclusively on an internal supplement containing 5 mg per day of Natural Astaxanthin along with two other ingredients. The results were very favorable, with the supplemented group seeing improvements in fine lines, a visible improvement in overall skin appearance, and an increase in dermis density of up to 78% in the treatment group. (This study was done on a proprietary formula, and while the authors have been provided with a copy of the study, we have been asked not to disclose the formula or publish the exact details of the study.)

To summarize, Natural Astaxanthin is an effective internal sunscreen that protects the skin from the damage caused by exposure to UV light. This has been demonstrated in-vitro, in animal models as well as in a human clinical trial. In addition to its protective properties, there is strong evidence that Natural Astaxanthin has curative properties for the skin and serves as an internal beauty supplement. While the authors of this book would like to see more research in this area, it certainly appears that Astaxanthin has great potential as an anti-aging supplement to improve and protect skin.