A Special Interview with Dr. Robert Corish

Part 1: Astaxanthin

By Dr. Joseph Mercola

DM: Dr. Joseph Mercola

RC: Dr. Robert Corish

Introduction:

DM: Welcome, everyone! This is Dr. Mercola. I’m just beyond delighted and very excited to have with us, Dr. Robert Corish, who is a physician and interested in really similar topics as I am.

I first met him a year ago at the Natural Health Expo West in Los Angeles in March, which they have every year. He is a phenomenal resource on one of my favorite antioxidants, astaxanthin. Literally a few months prior to me meeting him, I didn’t even know how to say the word, let alone what it was. He’s had, however, knowledge of this for quite a few years and is really one of the true experts there. I’m just delighted that he’s able to join us and very excited for the information that he’s going to be sharing, because I have had a preview of it. I can assure you, it’s just incredible. Welcome and thank you for joining us, Dr. Corish.

RC: It’s my pleasure. Good morning.

DM: Why don’t you tell our listeners a little bit about your background, how you first became interested in natural medicine, and specifically, how you acquired your expertise in astaxanthin?

RC: Well, I was trained in the conventional sense as a medical doctor here in the United States. I became an anesthesiologist. I’m also board-certified in pain management, and I’m also certified in clinical metal toxicology.

Over the years, I have noticed that younger and younger people are coming for surgery. They’re on greater amounts of medications. So, I have been watching this trend go for the last 10 years, and it was really this that sparked me into investigating.

There’s got to be another way. There has to be something better than our way of bringing people, giving them a pill, and once the pills don’t work there’s some type of surgical procedure. It just dawned on me. We need to be preventing this rather than just treating it. I think this trend was the thing that precipitated my investigation into natural medicine, looking for alternatives.

When I started looking at this 10 or 15 years ago, natural medicine kind of had a little bit of a taboo label attached to it – “voodoo medicine.” But I think that over the last five to 10 years, there’s so much research that has come out in the natural medicine sphere that we are now proving ourselves that we have good clinical data, we have good
clinical outcome with natural medicine – that we can really compete the conventional pharmaceutical field.

And more importantly, we can prevent problems happening before they occur. We don’t need the pharmaceutical medication. We have a healthy and better lifestyle. And you don’t end up in the operating room visiting me in some hospital. So, that’s how it really pushed me into studying alternative, healthy, and functional medicine.

My involvement with astaxanthin started about seven years ago. There was a gentleman. He was an organic foods expert. His name is Mark [inaudible 03:07]. He became a marketer for a company out of Hawaii. The company’s name is Cyanotech, and they produce astaxanthin. While I got to know him, he introduced me to astaxanthin. I started looking at the studies of this carotenoid. And I was very, very impressed, because I have never heard of it.

DM: What year was that?

RC: We’re talking 2006 or 2007.

DM: Okay, so that’s relatively recent.

RC: It’s relatively recent, and even since that time we have so many more studies on it – over 500 peer-reviewed journal articles on astaxanthin. I have seen in the last five years, many of them are now introducing human clinical studies. We have moved from the animal model, now into the human clinical studies. The results are very, very impressive. They’re only reflecting what we saw in animals that enhanced tremendous clinical benefits.

I have been involved with the formulations with astaxanthin and, basically, educating the physicians and other people about the benefits of this tremendous antioxidant.

DM: Okay. We’ll get into that in a moment, but I just wanted to address your transition from the traditional model into natural medicine, which is really quite commendable. It’s unfortunate that such a small percentage of physicians really seem to abandon their curiosity and their desire to really find out the foundational cause, what are the primary reasons why the people that they’re seeing are truly sick. I mean, it doesn’t take a rocket scientist to figure out that very shortly, you know you’re just providing symptomatic Band-Aids, and there’s no way that you perform addressing the cause.

It is kind of surprising to me that more physicians aren’t making this transition. They have just been so effectively manipulated and brainwashed that they’re practicing the traditional model. But I commend you for doing that. Really, that is— in my book and in my view – one of the signs of a really outstanding physician who can really abandon what they have learned and just use the tools on how to learn and reevaluate what their real-life experiences are and modify that based on what their perception of reality is.

RC: Well, I also want to clarify that I believe that. Conventional medicine, we shouldn’t abandon it.
DM: Oh, sure.

RC: Conventional medicine with the functional natural medicine, they should really interface. I mean, if I happen to fall over right now with chest pain and a heart attack, I want to be taken to an emergency room where they can place a stand tall, put me on clot busters. The point is that if I know that I can adjust my lifestyle, which when I eat reduce my stress, definitely cut down on inflammation, the chances of me ever arriving at this point of chest pain and having a heart attack are minimized.

The message is prevention. You don’t want to go down that road. That’s the problem that we have with our conventional medicine. As you have just said, conventional medicine is really not health care. It’s really “sick” care. We allow a person to get sick. We have a problem, and then we do the Band-Aid. We have a prescription or we go to surgery and take something out. But it’s downstream. What you and I are talking about is upstream. Let’s prevent that and have a healthier and a happier life.

DM: Sure. Obviously, there are some things that you’re not going to prevent, like acute traumas and such. That’s where traditional medicine just excels. I don’t think anyone in the right mind would dispute the fact that it’s absolutely appropriate to have intensive care in acute trauma centers and such to address that. But the bulk of the health challenges that we’re all going to experience is a result of chronic disease, where the preventive model is absolutely appropriate.

The challenge is that there is a very small number of physicians or percentage of physicians who really understand and appreciate this. It’s likely that someone listening to this or watching this video will not be seen by a physician or have, as a primary care provider, someone who is not really oriented to this model. What would your recommendations and suggestions be to that individual, if they’re seeking to find someone to coach them in integrating these alternative approaches to their healthcare challenge?

RC: You know, I wrote a book on men’s health. And men notoriously don’t want like to visit physicians. Women have a better habit of taking care of themselves from a younger age with pap smears. Men do not like to discuss their health problems, and they don’t like to be told by a physician what to do.

So, when men ask me this, I say, “Well, change your physician.” That’s what you’d do if you have a poor mechanic, if you had car problems. If you didn’t like what the mechanic was doing to your car or the diagnostics or the way he fixes your car, you don’t have a problem changing the mechanic of your car. If you feel uncomfortable with your physician, then I think it’s fair to say that you shop around to look for a physician that you feel comfortable with and a physician that will appreciate your views of prevention rather than we-want-to-treat-it-now. Finally, a good physician would be number one.

After that I think nowadays, it’s incumbent on ourselves that we take care of ourselves. We worry about how we’re going to retire, so we’re watching our retirement programs, we’re looking at our money in the bank, and planning for the future. It’s the same with
health. You have to plan it. It’s almost like you’re putting money in your biological bank account. So, exercise, stress reduction, lifestyle changes, your dietary changes, and doing your homework – watching shows like yours, going on Google, printing questions and things that you’re interested in, and reading. But prevention is best, and it really is incumbent on the part of everybody to be preventive.

You have to be proactive. You have to go out there and do it. I would start off by finding a good physician and discussing with the physician your philosophies, that you prefer to prevent rather than allowing the wheels to fall of the bus and now trying to fix it. Proactively do homework, due diligence, and adjustment. You have to do it. As Nike says, “Just do it.”

DM: Yeah.

RC: Exercise and change your diet. A little bit goes a long way with the body, and people don’t realize that. A little bit of exercise, your body will thank you. It will respond. Your immune system will kick in, your hormones will kick back in, and the repair process. All these things will work with just a little bit of exercising. As you increase your tolerance, you get greater benefits.

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It is action. It’s a call to action. You have to be proactive.

DM: Yeah, if I could just respond to that, because I have been passionate about exercise for about 45 years. I have been doing it since the late 60s consistently. I made some mistakes, and I’d just like to share the mistakes I made that will hopefully provide as an experience that would prevent people from making similar mistakes. I couldn’t agree more. I’m absolutely passionate as you are about exercise.

The challenge and the finetuning, though (in my experience), is to understand that the diet is actually more important. Yes, you’re doing both. But if you’re eating a poor diet, you’re making poor choices, having unhealthy fats, sugar, and processed foods, then you are not going to maximize the benefits of exercise and you’re certainly not going to optimize your body density and lose weight. That’s the key.

But then even when you’re in the exercise, there’s – in my experience and I’m sure you have seen it, too, when we’re travelling and using fitness centers in the hotels – 80 to 90 percent of the people who are exercising are using the traditional cardio aerobics. Yes, it’s certainly better than sitting on the couch and doing nothing. But you know, just for actually less effort, maybe not less effort but less time certainly, in high-intensity exercise like the thing we call Peak Fitness, you can have a profoundly exponential benefit with just trying to do that.

The devil’s in the details, so I just want to emphasize that I couldn’t agree more than exercise. But the application is really so crucial on how you do it.
RC: Absolutely, balance. Everything is balanced – exercise, your dietary choices, supplements, stress reduction. We are what we eat, drink, think, and do. So it’s a good creed. It’s a balance, and it’s a real program.

DM: Absolutely. Speaking of those, you mentioned earlier that you had written a book, A Guide to Men’s Health, so why don’t you tell us about why you wrote that book and some of the important topics that are in it?

RC: Yes. This happened about three years ago. I know you experience this as a physician. Every time you’re at a family gathering or a cocktail party, you usually have somebody come over and ask you a medical question. They’re very apologetic, “Do you mind if I ask you one question?” This has happened for years and years. A lot of men would come up and ask me private questions and medical issues. And I would give my advice of what I thought they should do.

At one point, I just decided, “Let me see what resources are out there.” There are not a lot of resources for men – not written in men’s language. So, I decided to write a book on men’s health. It’s A Guide to Men’s Health. It answers the questions all men should ask their doctors, and it really deals with all the things that the guys really come up to ask me, you know. How can I prevent a heart attack? How can I prevent Alzheimer’s? What’s this about anti-aging, male menopause, hormones? What tests do I take? When should I take these tests? What’s normal? What isn’t normal? Nutrition – what’s considered a good nutrition? What vitamins should I take? Why should I take vitamins?

I put this book together. It’s written in men’s language. It’s in a format the way men think. You ask a question, and we just want short answers. So, this book is really questions, “How can I prevent a heart attack?” I have written, “These are the steps you need to take to prevent a heart attack” with a little bit more detail, but it’s easy to understand. There’s humor in it.

It was a project that I wanted to do. I have completed that. Now I have moved on to my next project. But yeah, I think the impetus was just men coming up and asking me questions and realizing there wasn’t really a great resource out there for the layperson and for the general men to read and understand.

DM: Terrific. I’m glad that you put that together. Do you have plans on doing one for women in the near future?

RC: Yes. Yes. Women are a little bit more complicated and require a little bit more research. But then, that’s the plan. I hope to have that one soon.

DM: Terrific. Well, let’s go to a topic that’s near and dear to both of us, which is astaxanthin. It’s a mouthful to pronounce, but once you have done it a few times, it kind of rolls off the tongue. As I said earlier, it really is one of my favorite. It’s almost one of the few supplements that I think almost everyone could take, because we’re all exposed to these chronic degenerative conditions where oxidation is such a powerful and potent influence. This is one of the premier antioxidants that are out there.
I’m wondering if you can tell our audience – because I have never heard anyone articulate this better than you – what astaxanthin is and where it comes from.

**RC:** Astaxanthin is a plant pigment, and it’s in the same family – the carotenoid family – as beta-carotene, lycopene, and lutein. It comes from the same family of carotenoids. The carotenoids are responsible for giving our plants and fruits their vibrant, bright colors. So, oranges, the yellow of squashes, zeaxanthin, green in spinach, and obviously, orange in carrots. Astaxanthin is a blood-red pigment.

We can obtain astaxanthin from a variety of sources. Up the food chain, you can attain astaxanthin from salmon. You can obtain it from krill, from shrimp, from red trout, fungi, and microalgae. Of all these sources, the microalgae are the most potent. In fact, when you think about it, the krill, the shrimp, and the salmon eat the marine microalgae, so as to obtain their astaxanthin. It’s – in my thought – much better to go right back to the source, which is the microalgae.

That particular microalga is called *H. pluviialis*. It’s an alga. What happens is this alga, when it’s on the stress (and the stress could be excessive sunlight, a change in the pH of the water that’s it in, or maybe a lack of nutrient, a phosphorous, etc), what it will do is it will manufacture this carotenoid – astaxanthin. This astaxanthin will then create a dome of protection over the alga, so as to protect from the crisis at that time, whether it’s excessive sunlight or not. And it will absorb the free radicals and protect the algae from injury. Once the crisis has passed, the algae will reappear and get on with their normal life cycle.

It’s a wonderful antioxidant. It is well-documented that these algae can survive up to 30 years in times of drought without water. So you imagine, 30 years without water. When the water reappears, the microalgae miraculously reappear and continue with their life. That’s the type of antioxidant capacity that these microalgae can produce with the astaxanthin. Imagine having that kind of antioxidant payload within the body. Now we can through astaxanthin in supplements. That basically describes the different sources where we can receive it from.

To give you an idea of the differences in the potency, and this is another reason why I prefer the marine microalgae. When you take gram per gram of the sources, so salmon – one gram of salmon, it will contain anywhere from five to 40 parts per million of astaxanthin. If you take krill, it contains 120 parts per million, okay? And shrimp, about 1,200 parts per million. When you take that same microalgae, when we go right back to the original source, the original manufacturer of astaxanthin – gram per gram, it’s 40,000 parts per million. So, it’s far more concentrated, and it’s far more potent in the microalgae source. Obviously, that’s my preference for my source of astaxanthin.

**DM:** Terrific. I’m just curious about the benefit of surviving 30 years without water for the microalgae. If there’s any studies that had actually isolated that benefit to the astaxanthin specifically. Like maybe, they have knocked out the gene that’s responsible for producing it and see if they still can live those 30 years or, you know, some other way to discern whether or not that’s the primary responsibility for that.
RC: There’s an evolutionary component. There’s no doubt about it. But if you think of 30 years of free radical assault on those microalgae, there still needs to be that dome of protection. And astaxanthin is such a strong and powerful antioxidant that it can provide that dome for that amount of time. It’s a great question that you asked, and it needs more than one component. But it definitely needs the antioxidant component, so as to absorb and neutralize the free radicals. Otherwise, it’s dead in the water; it’s dead without the water, so to speak.

DM: That’s a good point. I’d just like to mention another comment on that topic while we’re discussing it. I have heard other experts describe this as a force field that sorts of get generated, which I think really provides a good metaphor for people to understand it. Specifically, because a lot of our sources or especially when the sun, which we both entirely recommend as a way to get out vitamin D or as a source of vitamin D. One of the downsides of that is, of course, going to be this oxidant stress, specifically from ultraviolet light.

I’m wondering if you could maybe, expand a bit on this force field that gets generated and some of the physics involved with respect to the ultraviolet [inaudible19:41] with the astaxanthin specifically and sort of dissipating that electron-damaging stress.

RC: Sure. Astaxanthin is a very unique molecule. In fact, it’s being described as the king of carotenoids. I would say that it’s the king of antioxidants.

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It is a very, very unique molecule in the fact that where it positions itself on the cell membrane, it spans across the cell membrane rather than longitudinally. So, there’s a portion of the astaxanthin on the exterior of the cell, a portion on the interior of the cell, and then this portion that spans across the lipid layer.

What this translates to is it offers protection on the outside of the cell from free radicals, the inside of the cell where there are free radicals being generated, and also this lipid fat layer where we always hear about lipid pro-oxidation. Just a position of the molecule is just at perfect… It’s perfectly designed to protect all parts of the cell. That’s extremely unique.

Another point that I’d like to emphasize is that with vitamin C6 or vitamin E, which also likes to sit outside of the cell membrane and usually in partnership with selenium. We have tocopherol selenomethionine complex on the outside of the cell. So, it likes to grab free radicals and neutralize them on the outside of the cell. But it doesn’t really extend to the inside of the cell. It’s another advantage that astaxanthin is really very global when it comes to cellular protection.

Here’s the point that I wanted to make. Most antioxidants, the ones that we know of – vitamin C, vitamin E, and various others – usually, it can only handle one free radical at
a time. Vitamin C can handle one free radical and neutralize it. Vitamin E can usually handle one free radical at a time.

Astataxanthin can handle multiple free radicals simultaneously. Why it can do this is it forms an electron cloud around the molecule. It’s known as the electron dislocation resonance – big fancy word. What happens is this cloud that’s floating around the astaxanthin, when free radicals come in to steal electrons, rather than a one-on-one, it’s just absorbed into the cloud, neutralized, so it’s harm is being diffused, and the energy is diffused as heat.

However, astaxanthin can handle multiple types of free radicals. Certain antioxidants can only handle one at a time, and they only have a preference to one type of free radical – a singlet oxygen free radical, a nitric oxide free radical, or a peroxyl free radical. So, everyone has a bias. Astaxanthin can handle multiple types. It can handle different species of free radicals and it can handle multiple free radicals simultaneously, all at the same time. This is unique and is really why – I think – astaxanthin is the most powerful antioxidant that I know of. It’s the most natural one. It speaks for itself.

We have got plenty of studies, and Nishida’s had been comparisons between vitamin C, resveratrol, and vitamin E. I’m not a big fan of (we can talk about this) the ORAC value, but astaxanthin as being shown to be 6,000 times stronger than vitamin C, 500 times stronger than vitamin E, 3,000 times stronger than resveratrol and quercetin. This was done by a very reputable scientist, Nishida. He was using three different types of free radicals.

When we compare different antioxidants, we actually do have a frame of reference from Nishida’s studies and another guy called Bagchi from Creighton University, who compared head to head the singlet oxygen quenching ability, which is a free radical, between astaxanthin, green tea catechins, resveratrol, and all the antioxidants.

Really, astaxanthin eclipsed the other antioxidants, because of these factors that we’re talking about. It can handle more free radicals simultaneously when you can only handle one or two. It could handle multiple species. So, it really is in a class of its own. When we compare it with other antioxidants, I really astaxanthin is the strongest that we have so far.

Right now, the studies and the clinical research that’s going on is proving that it’s the strongest antioxidant. We’ll wait and see how as time progresses, I’m sure we’ll discover more natural antioxidants out there in nature. But astaxanthin really is the king at this point, because of its unique molecular structure and its tremendous capabilities of diffusing so many free radicals.

DM: Thank you for explaining that. Every time I listen to you speak of this, I learn more. I really appreciate that description. For our listeners, I just want to highlight an important component of this that may have been overlooked. When you referenced the
traditionally acknowledged and recognized antioxidants like vitamin E and vitamin C, which, of course, astaxanthin is so much more potent, is true that those only work once before they essentially become oxidized?

RC: Yes.

DM: And that they need to be recharged usually by things like ubiquinol or coenzyme Q10. I’m wondering if you could go over that process and expound on it to help put a better perspective on the topic.

RC: Sure. Let’s go back a step. Let’s explain what a free radical is. We’ll talk about antioxidants. Then you’ll be able to see the differences in the capabilities of the different antioxidants. A free radical – my definition of a free radical – is a toxic, unstable molecule that attacks and steals electrons from other molecules. Those other molecules could be our DNA. They could be enzymes. They could be critical proteins within the cell. So, they inflict damage on the cell.

Not only that, they actually trigger chain reactions. All of a sudden when we have these dangerous, toxic free radicals come again, now we have a chain reaction. We have a tsunami of free radicals stealing electrons from our cellular parts. The cells become dysfunctional. They die, and this leads to health problems. We’re talking about cancer, inflammation, heart disease, and the whole gamut of medical problems. The point I’m trying to make is that it all begins with the free radical.

Now, this process by which these free radicals cause damage to cells is called oxidation. When we talk about antioxidants... And an antioxidant is a substance that stops free radicals from causing damage to cells, hence the name antioxidant. So, the process of damages of oxidation, the protection of it is antioxidation. Now we have a group of natural nutrients that we know will neutralize and mop up these free radicals. We call them antioxidants.

Now I’m taking again, vitamin C and vitamin E. They can handle one free radical at a time and neutralize them. The free radicals being taken care of, but now vitamin C and vitamin E are being exhausted. They have become exhausted, they’re tired, and they cannot go on to grab another free radical. So, you’re right. They now need to be recharged. And there are other antioxidants and co-factors such as ubiquinol, glutathione, and alpha lipoic acid. Even vitamin E at times will help to recharge. They work as a team.

Depleted vitamin C may be recharged by vitamin E, alpha lipoic acid, and ubiquinol (as you just said). They all handle the oxidized portion. Now vitamin C can go back and grab another free radical. These other antioxidants really become exhausted.

Another point is that at some times, the antioxidant that has become depleted and exhausted actually proceeds down the line and now becomes a pro-oxidant. It can actually switch teams and become a free radical itself, which is harmful. Astaxanthin never ever becomes a pro-oxidant. It might become completely used up, but it doesn’t continue down the road and become a pro-oxidant. It never becomes a free radical.
With the astaxanthin, another feature is it remains benign after it has been used up, and it has greater capacity compared to the other antioxidants, which can only handle one at a time, and they become exhausted.

This is really why we need to take vitamins, supplements, and antioxidants on a daily basis, because we deplete our reserves. Once you deplete on your reserves, then we have a problem with the free radicals versus antioxidants. It’s a numbers game. Once the free radical members are elevated and you don’t have enough antioxidant reserve to neutralize them or mop them up, these free radicals are now going to cause cellular damage, and cellular damage leads to disease – heart attacks, cancers, autoimmune disease.

That’s the whole pathological process. That’s why we’re concerned about free radicals. That’s why we need antioxidants. And that’s why we need to choose the correct and most potent antioxidants, so as to definitely build up our reserves and know that we have got that defense system.

DM: Thank you for that very eloquent description. I have listened to the oxidative process and free radicals explained by many people. But it clearly is one of the best descriptions that I have ever heard, because it describes it in such an easy to understand term. You have really mastered the metaphors there. Thank you for that.

Now, with respect to it being used up, I wonder if you could comment on that.

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Because it is a bit of an area of confusion for myself – and I’m sure many others – that it clearly has a far expanding capacity of traditional antioxidants. But is there any way to know that once used or a way to know that it’s used up, or typically what’s the range? How many times can it – I guess – neutralize a free radical before it’s not useful anymore?

RC: Yeah. That’s a great question. That is an excellent question. We, at this point, do not know at what point it is used up. So, what we would consider therapeutic levels. This is an evolving field. It’s similar with vitamin D. We started at one point saying, 200 IUs, then it became 1,000 IUs, and then 5,000 IUs, and now, I believe it’s anywhere from 7,500 to 10,000 IUs of vitamin D a day. It’s very similar with astaxanthin. We started with two milligrams. It went to four milligrams. Now we’re finding that there are certain conditions require 12 and 16 milligrams at times.

This is an ever-evolving field, and I think at some point we’ll find out. It’s very dynamic. It’s not a static process. It’s not an antibiotic where you give this amount of antibiotic and you get these fixed results. It’s an evolving field. We do not have the tools to measure the amount of depletion that occurs in the body, the half-life of it. We do know the half-life, but we don’t know when it’s completely done. It’s exhausted. Just like anything, we know that once it’s exhausted, it just isn’t immortal, so you need to replace it.
Astaxanthin, once it becomes exhausted, will convert into what we call astraxin, which is a benign byproduct. It’s an astaxanthin that has done its job. It’s very tired and ready to move on. It doesn’t do any harm to the body. Now when we produce, we take more supplements, we’re introducing the fresh astaxanthin that can handle multiple free radicals, and some cases more than 19 at the same time.

So, it’s got a greater capacity for the amount of free radicals and also the longevity when compared to vitamin C. Because vitamin C is depleted very, very quickly, it needs to be replaced very quickly, and astaxanthin will definitely eclipse this performance. But we do not have blood test at this point that will measure while your astaxanthin levels are low.

DM: I’d just like to address the potential toxicity. You made it really clear that it does not appear to have any, but I’m just personally curious –this metabolite effort used up is astraxin, if it has been documented that the body recognizes that, it has no longer any benefits, and there is an active excretion to remove it. Because if it’s not, it would seem that if you’re taking large amounts, there could be some potential concern about the buildups of the metabolites.  

RC: Well, a gentleman called Dr. [inaudible 33:10] of Georgetown did lots and lots of these and found that it was absolutely harmless. Hoffmann-La Roche did extensive studies on astaxanthin. They did testing on acute toxicity. They did testing on teratogenicity, embryological toxicity, and reproductive toxicity. They found absolutely no harm or whatsoever. What the body will do is that it will go to the liver. The liver will repackage it, reassemble it, and then it’s ready for excretion.  

The only side effect that we’re aware of is that if you take high doses – and I’m talking about 50 milligrams a day – you might get an orange hue in your skin, because it does have a bias and it has a propensity to go to your subcutaneous tissue, if it’s a fat-soluble supplement. So, you might get a slight orange hue on your skin. Nothing to cause alarm, but that’s with very, very high doses. That’s the worst complaint that we have ever heard of, and that’s once again with very high doses.  

But it never becomes a pro-oxidant, so it doesn't switch teams and become a free radical. We know it doesn’t cause any mutagenicity, so we’re not worried about cancer. We’re not worried about reproductive toxicity. There’s no acute toxicity to the liver. It doesn’t become a vitamin A, so we don’t get vitamin A osis.  

Plenty of definitive studies have shown that it has an excellent tolerability and safety profile. The FDA generally regarded it as safe. It fits into the same category as all the safe supplements. We’re very confident that we have a wonderful carotenoid without side effects.

DM: Thank you for describing that and providing that reassurance on this toxicity. The times that we have posted articles on astaxanthin, there have been a number of what I would say dissenting comments that I believe really highlighted what’s best described – from my view – as an urban legend or an old wives’ tale. I don’t know who started it, but
perhaps you could share some insights on this, that it has some negative adverse influence on male hormones. I don’t recall the specific concern, but it had to be some hormonal component. I think that Dr. Weil was part of the process of promoting it, from my understanding. I’m wondering if you can comment on that.

RC: Well, my only comment on that is I have probably read 400 of the peer-reviewed journals of the 500, and the only other 100 are really in Japanese, but I have read the abstracts of those. And I have not seen one dissenting gap or any paper that would say that it adversely affects hormones. I have been personally taking it for 10 years, and I have never seen that article on its negative effects. The International Carotenoid Society does great work on really looking at the different carotenoids. They produce great data and a lot of information.

Obviously, astaxanthin is a hot subject, because it’s the new hot antioxidant. There’s plenty of data out there, and I’m not aware of any that says it affects hormones, liver enzymes, and kidney function. In fact, the adverse is that we think it helps kidney function, protects the liver from oxidation and inflammation. So, I’m not aware of that.

DM: Okay. Thank you for that reassurance. The other point that I’d like to emphasize and I’m sure you would agree is that it’s very easy to get psyched about astaxanthin. As you could obviously tell from your passion and when I have talked about it in the past also. We want to balance it with the common perspective. Especially, many people know that natural medicine is… In America, there’s this tendency to look at it as a magic pill solution for a problem, because of the reliance and the traditional approach is to take a pill for a problem. That may be useful, certainly even with drugs, and certainly far more safer with supplements.

It really isn’t the ideal approach. I think you would agree that supplements are just that. They an addition to a healthy diet. I’m wondering if you could comment on that and the fact that it really isn’t a magic pill. In fact, there’s probably a synergism between the other antioxidants and, of course, the use of a whole diet, which has nutrients that I’m sure we haven’t even discovered yet. Realistically, we’re pretty ignorant in figuring out the whole human biology. We have got a long way to go before we even begin to appreciate it on a deeper level.

That’s my concern. I just wanted to make sure that we weren’t promoting a concept that had people relying on this as a magic pill.

RC: Yeah. You’ve nailed it. It’s balanced. It’s lifestyle. It’s appropriate nutrients, exercise, stress reduction, and minimizing inflammation. It really is what we eat. So, we need to choose carefully the foods we eat.

Unfortunately, in our modern day, fast food, speed-ahead lifestyle, and most of all food is over-sterilized. It’s over-processed. It’s being stripped of all its nutrients, vitamins, and goodness by the time that it gets to our table. This is why we do need to supplement. As you have said, it really is just to supplement the lack of nutrients from the food that we take every day. The best way to obtain your antioxidants is really through foods. We do
take supplements just to make sure that we have got those benefits that might not be in our food because of the processing.

As you mentioned, it’s not just one single antioxidant. Obviously, astaxanthin is my favorite. Because it’s the most powerful, I definitely want it on board at all times. But there are varieties of antioxidants. We have got vitamin C, vitamin E, vitamin A – the traditional antioxidants. Also, minerals are very important – our magnesium, our zinc, and our selenium, which have tremendous antioxidant properties as minerals. Then we can go on to the flavonoids – the polyphenols and the catechins from green tea. So, it’s a whole team of antioxidants that work synergistically – as you have described – working together against free radicals.

The other thing that is important to mention is that rather than conventional medicine, which will say, “Here’s a pill for your acid in your stomach, your irritable bowel syndrome, or your blood pressure”… As you know and as you and I both propose is that network pharmacology (we call it network pharmacology) is far better than the conventional approach.

Network pharmacology influences multiple overlapping pathways that share similar functions. When we talk about network pharmacology, we’re talking about nutrition. We’re talking about the natural approach of antioxidants, food, and healthy nutrients. They provide a very, very broad, unified healing approach rather than the conventional, which is a single target, single mechanism, and single outcome.

With the network pharmacology and with these overlapping processes, it allows the cells to readjust, to repair, and to remodel. So with the network pharmacology approach, we get more of an adaptogenic approach rather than the single blocking effect of conventional medicine.

I feel that this unified, broader healing response is safer. It’s effective, and it doesn’t have the side effects. That’s why I like the approach of multiple supplements – of course, the right ones – combined with the right type of diet and good beverages. That really produces this network pharmacology that’s natural and has a much safer and very effective approach towards health rather than just taking a single pill.

**DM:** Okay. Thank you for confirming that and sort of emphasizing the perspective that this is not a magic pill. So that when we talk about our next topic, which is what it’s actually useful for (I mean you have mentioned a few things, but we have been going to more detail now), that we have that perspective that this is not a magic pill, that diet and exercise is really crucial and along the other items that you have mentioned. If you could outline and identify the key areas where it’s useful and then also maybe you can mention the dosages.

Let me just comment, too, that primarily because of my discussions with you, I have actually increased my own personal doses to the point of six milligrams a day now. And I may increase it more. The typical dose [inaudible 42:21] is two milligrams. But I think
there’s this emerging evidence that suggests that the dose needs to be higher a little too early. I believe that we are actually in the process of introducing a higher dosage to make it easier, so people don’t take so many pills. If you can comment on the indications and the dosages, that would be great.

**RC:** Well, astaxanthin has already shown that it can affect a variety of different clinical conditions and health conditions. It showed a lot of efficacy in cardiovascular disease. We talk about cardiovascular disease. There are studies from Yoshida, Park, and Fassett that have shown that astaxanthin at 12 milligrams per day can increase your HDL cholesterol, which is the good cholesterol by 15 percent. It can reduce triglycerides by up to 25 percent. More importantly, it can reduce your C-reactive protein, which is a biomarker for silent systemic inflammation. It’s been shown to reduce that by 21 percent.

So, as a cardiovascular dose, we tailor to 12 milligrams, because that what the studies have shown to be efficacious.

It’s also being shown to be very useful in joint pain caused by inflammation. There are some excellent studies out there by Spiller and other researchers that have shown that it reduces nuclear factor kappa beta, which is the master switch that turns on the whole inflammation. It reduces tumor necrosis factor and other pro-inflammatory cytokines that causes inflammation, pain, and feelings.

There’s one study that even took patients with rheumatoid arthritis, which has to be the worst of all the arthritides. We have osteoarthritis, psoriatic, lupus arthritis, but rheumatoid arthritis really is disfiguring and very, very painful.

**DM:** I might suggest that scleroderma might be worse.

**RC:** Well, scleroderma, I’m not sure.

**DM:** [Laughs] It’s a little worse. I take care of a lot of R.A. patients, and that was a challenge for me – scleroderma.

**RC:** Every inflammatory process is not good and has its own ranking. But when they took the rheumatoid arthritis patients and placed them on four milligrams of astaxanthin, these rheumatoid patients reported an 85 percent improvement in their pain score, 60 percent improvement in their mobility, and almost 30 percent improvement in their gastrointestinal comfort rather taking NSAIDs and prescription medicines.

I thought that this is the important point of this group of people with rheumatoid arthritis: 60 percent said it was just as effective as their prescription medicines. That’s some power right there, and we’re talking four milligrams a day. It has shown a lot of influence in joint pain with inflammation.

It’s shown efficacy in eye health. I know that you have shown this on your website. Dr. Tso (it’s spelled T-S-O) has done a lot of research to show that it protects the retina from free radicals. It has helped to retard the formation of cataracts. And the big thing is
that it really is important in protecting the macula at the back of the retina that covers
the fovea, where there’s a high concentration of photoreceptors. That’s really
responsible for your sharp and fine eyesight. We all know that. Age-related macular
degeneration is the number one cause of blindness here in U.S.A. for people who are
over 65 years old. And we don’t have a cure for it.

It’s caused by free radical damage, especially from blue light in the whole spectrum of
light. It breaks down the macula. And if you could think of the macula as being a little
brake pad that sits right in front of this fovea, this very sensitive area. This brake pad
actually protects the fovea from these incoming free radicals. It’s still protected. Once
this wears down and becomes worn, this is macular degeneration. It causes blindness.

We now know that lutein, zeaxanthin, and astaxanthin really, really protect that macula
from further deterioration. It has a very, very exciting future for the protection of our very
precious eyesight.

DM: Would you suggest believing that astaxanthin is the most potent of all those three,
and that astaxanthin is not only useful, of course, for prevention as you mentioned, but
actually useful as therapy if you have age-related macular degeneration?

RC: If you have age-related macular degeneration, you have got to be very careful not
to make a claim that it’s a cure and that it would arrest it. However, if it was my family
member who came to me and said, “I have just been diagnosed with early age-related
macular degeneration,” I would definitely want to begin a series of steps to prevent this
from deteriorating any further. It would definitely include astaxanthin, and I would also
include zeaxanthin and lutein where the original studies utilize the other carotenoids.

They’re all in the same family, and we know that vitamin A is very good for the eyes. So,
the carotenoids have a propensity to protect the eye. When we compare astaxanthin,
lutein, and zeaxanthin for their free radical capturing ability, astaxanthin eclipses its
carotenoid cousins. However, having said that, I would definitely want to have a formula
with all three. Keep the family together. They help each other out. Now we’ll have a
better teamwork in fighting these free radicals that come in.

But Dr. Tso did this direct head-to-head comparison and showed that astaxanthin is far
more potent in its protective abilities of the macula. Once again, I like this network, this
teamwork phenomenon. It’s got a proven effect.

DM: What type of doses are you talking about for prevention and then for treatment?

RC: For the eyes, I think six milligrams would be the level that I’d stop at, but it’s
anywhere between four to six milligrams for eyes. When we were talking about the joint
failure, I think it’s anywhere from four to eight milligrams. When we’re talking about
cardiovascular disease, the study shows 12 milligrams.

Then there’s another application. Last year, in the British Journal of Nutrition, there was
a study on cognitive decline. There was a study on Alzheimer’s. Another property of this
incredible antioxidant is that it passes through the blood-brain barrier. It now offers us
protection to the brain, the spinal cord, and the central nervous system. As you know, free radicals are responsible for causing strokes, cognitive decline, and dementia. So, we really need some type of antioxidant that can definitely pass in there and give us some protection. Astaxanthin does just that.

We have found that there is an abnormal accumulation of hydroperoxides within red blood cells in people who have dementia and Alzheimer’s. We now know that if you give these patients astaxanthin, the amount of peroxides – these harmful free radicals – is reduced by 50 percent. That’s a significant reduction, and that is at a dose of 12 milligrams. This came out a year ago in the *British Journal of Nutrition*.

Later we searched it to say, maybe, maybe the introduction of astaxanthin may help to prevent (they’ll be careful with the claims) cognitive decline and Alzheimer’s by reducing these abnormal free radicals, these hydroperoxides by 50 percent.

[----- 50:00 -----]

The recommended dose for cognitive and brain health is also 12 milligrams.

On the same length, it was a study that came out of the *Journal of Neuroscience* in Japan, who placed patients on astaxanthin. They noticed an improvement in immediate memory and concentration. I must qualify that this was astaxanthin combined with DHA – the omega-3.

So there again, you see this network pharmacology. But astaxanthin was the antioxidant that was chosen for this. We can definitely see that it has great antioxidant protective abilities for the central nervous system and probably the most important organ – our brain. That is just another application that’s well-documented. This is ever-evolving.

You’re taking six milligrams. I encourage you to mainly bump it up to 12 milligrams.

**DM:** Really? Is that what you’re taking?

**RC:** Well, I take 12 milligrams. I want to have this essential nervous protection. I want the cardiovascular protection and also because of my activities. I have increased energy. It protects my mitochondria.

You know, we are bombarded by such an amount of free radicals. The free radicals that come from the environment, that’s in our foods, pesticides, herbicides, environmental smoke, and excessive sunlight. If I know that I’m going to be out playing golf for more than a couple of hours, I definitely want some protection. And astaxanthin provides that internal protection. I think 12 milligrams really covers everything.

If you want to just take it as a general antioxidant coverage, I believe between four and six milligrams will be adequate. If you want it for skin, two to four milligrams would be adequate. Once again, depending on the condition that you are really trying to target, you can tailor your dose.
DM: Interesting. One of the other benefits, too (and I’d like you to discuss this), with respect to providing similar protection against sunburn, sort of an internal sunscreen, you can take it when you’re flying. A number of people watching this certainly have to fly for whatever reason, primarily related to their occupation I’m sure. And when you do… I’m wondering if you have looked at this or have any thoughts on the dose for that. Because it should provide similar protection from other types of radiation like gamma radiation and others that you are exposed to when you’re flying at 35,000 feet that you aren’t typically exposed to at ground level.

RC: There have not been any studies with astaxanthin with regards to air travel and this increased radiation exposure by air travel. But outside receiving photons from the sunlight, it’s without a doubt. As you have mentioned, it usually takes twice as long. If you have astaxanthin on board, it will take twice as long to receive a usual burn than people who do not have astaxanthin. It prolongs. You have got some kind of protection. It accesses an internal filter.

There’s an interesting point that you have just brought up here. Just to really give your audience an idea of the damage that flying and being exposed to free radicals and radiation in plane, they did studies on people and measured their vitamin C levels before they get on the flight and after they got off the flight. When they finished and they were at their destination, across the board their vitamin C levels were completely depleted. It’s just showing you that their vitamin C was being eaten up all the way during that flight for protection. This is maybe a source of free radicals that we’re not very aware of.

As I said, a general coverage would be anywhere from four to six milligrams for your antioxidant coverage. If I’m going out in the sun, I’d take 12 milligrams. I think I’m well covered with that. But if I’m going out in the sun, I’ll make sure that an hour or two before, I have astaxanthin on board, so as to protect me from the ultraviolet A and B.

The interesting part about this, and you have mentioned this on your site, is that as we put sunblock on, we actually block the sunlight, the actual photons UVB responsible for creating vitamin D. We have to keep it balanced. But if you have to be outside and you don’t want to create a sunburn and inflammation on the skin, which now is really aging or photo aging, then astaxanthin is a good idea as an internal protection.

DM: Well, my guess is – and this is just a guess – that the UVB exposure from the sun that’s actually responsible for generating vitamin D occurs more superficial in the epidermis, and that the astaxanthin is providing the benefit at a deeper level. Because it’s systemic, it’s not going to necessarily screen and limit the body’s ability to produce vitamin D from exposure to UVB. That would be my guess.

RC: The way that vitamin D is created in the skin is the ultraviolet-B rays will penetrate through the skin. They will stimulate cell 7-dehydrocholesterol, and stimulate the cholesterol to become pre-vitamin D, which as we know, runs after the liver, becomes hydroxylated, runs down to the kidney, becomes second-hydroxylated, and then we have calcitriol (1,25-dihydroxyvitamin D). It is important that we get enough sunlight to
produce this. And 15 minutes of good, intense sunlight on arms, legs, face, and back should be able to do that every day.

The vitamin D is actually made just above the dermal level. It’s right in the dermal level — the dermis. We all know that the skin has multiple levels: spinosum, granulosum, all these lucidum, and all these various levels. It’s a graduation off to be and sloughed up. New skin cells are being made constantly.

We lose 40,000 skin cells every minute. And these new skin cells are all made in the dermis. The dermis is really the engine room of the skin. It is really critical that we protect this level. This is where the collagen fibers are. This is where the fiber elastin bundles are. This is the connective tissue. This is the whole support system for the skin. So, this is where astaxanthin tends to concentrate. This is where the cholesterol levels or also the fat levels are, just below that.

I like astaxanthin because it layers out there, and it will absorb these free radicals. As the ultraviolet-B rays could create tremendous amount of free radicals also. They’ll be neutralized. They’ll be mopped up before they can knock out these supporting structures. And that’s why we like astaxanthin as an anti-aging. Asian ladies eat astaxanthin up, because they have known about it for years. The astaxanthin will capture these free radicals before it hits the collagen.

This is the way I like to describe it. Imagine the collagen fibers in the dermis are like the framework of a house. The ultraviolet rays will come out, come through the air, come through the roof, knock out these fibers, and so the framework will fall down. When you knock down this collagen and elastin fibers, the whole skin layer will collapse in, just like the roof and the walls will fall in if we knock out the framework of a house. That is the anatomy of a wrinkle, a fine line.

If we can grab these free radicals before they can actually impact these collagen fibers, these elastin strands, we maintain a support system, and the skin tonicity and flexibility will stay there and we do not get wrinkles. There’s a great side effect, the women in Asia and Japan already know about it. They take astaxanthin every day. It’s another side benefit, an anti-aging effect if you like, all because of its antioxidant ability to grab these multiple free radicals.

DM: Yeah. It’s an interesting observation of human behavior or psychology (I guess would be more accurate) that what seems to drive people or motivate them is more of the cosmetic component. It’s a lot easier to position this and encourage people to take it, if they’re going to have radical improvement in the way they look versus some theoretical benefit 10, 15, 20, or 30 years on the road that’s going to slow down their aging process.

RC: That is life.

DM: [Laughs]
RC: No. It’s like when I tell men to take vitamins. They say, “Well, I have been taking vitamins, and I really don’t feel anything different.” I used the metaphor of the car. I said, “Do you have your car have an oil change?” They say, “Every 5,000 or 3,000 miles, I bet you.” I say, “Okay. When you finish that oil change and you drive out of that mechanic’s office, does the car drive any better? It’s not a trick question.” They said, “Well, not really.” So I ask, “Then why do you get the oil change?” They say, “Because it’s doing good for the engine.”

This is what we’re trying to teach our audience. Sometimes you don’t get back the great feeling. But you know that it’s doing good for your engine. You know that your body is working better with it. It’s thanking you. The immune system is working healthy. The cardiac system, your circulation, all these different systemic parts come together.

But you need to give them the nutrients, the building blocks, and the lubrication to function perfectly and to achieve optimal health. Unfortunately, you have just said it, cosmetics and our appearance always seem to win out over functionality.

DM: [laughs] It’s not sort of bad. It’s just a reality of life, and understanding that is helpful – I think – for any practitioner who’s listening to this.

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It may be wise to copy or borrow the metaphor that you used with car oil, which I think is brilliant. But also to recognize that that’s what motivates people, to really engage them at that level and so that they’ll do what’s good for them at a deeper level. I just think it’s important to understand that and appreciate it.

You have really enlightened us as to the benefits of astaxanthin. It’s really kind of surprising (I’d like your take on this) why more people aren’t aware of this, especially healthcare professionals. I only recently became aware of this. It’s less than two years ago. And I really, aggressively studied these areas and certainly, much more for everyone listening to this. So, I certainly didn’t come across. I’m wondering, is it just because it’s so new? I mean even yourself, 2005 to 2006.

RC: Correct. I’ll use another example – fish oils, Dr. Jorn Dyerberg, whom you have spoken to and you know him very well also, discovered fish oils back in the late 60s and early 70s. He realized, “Wow! These Eskimos have a great cardiac profile.” They have less heart attacks, less strokes by taking this fish oil, which you would think to increase cardiac disease. This was old and in fact in the 70s, so we’re going back 30 to 40 years ago. It’s taken that long for the whole community to really embrace fish oils as being an anti-inflammatory. We even have it now as a prescription. It took a long time to get to that.

It’s similar with astaxanthin. We have years and years of studies on animals – fantastic outcomes. Really, it’s only in the last seven years that we really started converting over now to human clinical trials. It’s really reflecting the same results that we saw on animals. It has tremendous benefits. It takes time to build up that reputation to get the word out and for clinical trials to be repeated. We like to see a clinical trial. We like to
see a repetition of that clinical trial to confirm and ratify. Yes. It actually does do that. We’re arriving there.

It is a neophyte in the field of antioxidants, but I do believe and I call it the next fish oil. I really call it the next fish oil, because I think its potential is explosive. Thanks to you and your opinions on Dr. Oz, it’s getting more playtime and people are realizing it.

That’s our job. That’s what you and I do. We teach. We educate. We want to improve the wellness. We are educators to help people have a healthful life, a long life, and a happy life. As we learn, we’re passing on the message. It is a new supplement, but it’s a rising star. It’s rising very quickly.

I used the fish oil to tell you how long sometimes it takes to penetrate the market. But it’s a star, it’s here to stay, and I call it the next fish oil.

DM: That’s a good analogy. One of the motivations for me to start the newsletter way back in the late 90s was a pretty much a mass of frustration in the current process with respect to educating the public. I have known about this since the mid to late 70s when I was in med school. It just seems surprising that it took so long for something that’s widely (and I didn’t know why I didn’t know) to be certainly recognized within the scientific community as being beneficial. That it took additional decades before it was commonly applied in the public.

I could do what I could in my practice, but it seemed like the educational intervention that I have integrated a lot of. I have seen a far better platform to speed up that process. Of course, you combine it with other media like television with Dr. Oz. You get exponential educational benefits. It’s really great.

But the key part of that equation though, is you have to understand or identify these areas, and that’s where I’m really grateful for individuals like yourself, who have been able to read 400 to 500 studies. [Laughs] One of the challenges with information is so much more as exploding that it’s impossible to keep up for anyone or for any individual to keep up.

We rely to team of individuals who have these passions like yourself and can really educate us very deeply on these topics, that they have the time to read all these studies on it, because it’s basically a full-time job to do that. For those of us who don’t have that luxury and full-time opportunity to really investigate these issues, I’m wondering what resources you could recommend for people, beyond this video and article that we’re putting together, so that they could learn about astaxanthin and the studies behind it.


DM: Can you spell that?

maker of astaxanthin and has a lot of information on their website about side effects, profiles, and applications of astaxanthin. Then they can also go to my website, www.RobertCorish.com.

DM: Okay, perfect. Thank you for that. Because you know, people feel much more confident when they’re able to independently and objectively validate these claims or statements for themselves. That’s what we seek to do. Every time we write an article or mostly every time we seek to identify the original studies, so that if people don’t believe our perspective or our interpretation of it, they can go and analyze it themselves and make their own conclusions. That’s our intention.

[END PART 1 OF 2]