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** * * Intro Music * * **

[00:44] Hello, everybody. My name is Dr. Paul Hrkal, and welcome to the *AOR Show*. This is a podcast about everything to do with natural health, how to apply nutritional, supplemental, botanical, and natural medicines to take your health to the next level.

[01:02] This is our inaugural show, so it's the very first show that we're doing. I think it's appropriate for us to talk about what orthomolecular medicine is because, after all, it is the *AOR Show*. For those of you that don't know, that stands for Advanced Orthomolecular Research.

[01:18] We're going to talk specifically about how orthomolecular medicine can take your health to the next level. We've all heard of things like naturopathic medicine. We've heard of homeopathic medicine. We may have heard of functional medicine, but we want to know how using nutrients and orthomolecular medicine specifically, and why a company, one of the leaders in Canada and now internationally, decided to take the name of orthomolecular. That's why we're going to start talking a little bit about that today.

[01:53] A good place for us to start is talking about what does orthomolecular even mean? Orthomolecular medicine was a term coined by one of the most famous doctors in the nutritional supplemental world. His name was Dr. Linus Pauling. He was practicing medicine and doing research in the 1960s.

[02:16] He came up with this term called orthomolecular. If you break down the word, it actually means ortho and molecular, which we all know what molecular means—obviously, molecules, the stuff that things are made up of. Ortho, from the Greek perspective, means correct or right. So, he was saying that we need to use the right or the correct molecule when we're doing anything that is going to have an impact on a person's health.

[02:48] He coined the term orthomolecular medicine, more specifically in and around the use of vitamins, minerals, and nutrients as it pertains to somebody's health. That's what he found was something that was a bit of a gamechanger.

[03:06] Pharmaceutical medicine was coming into its heyday at the time. He was quite openminded, so he started thinking about how do we use things that are naturally found in food? How do we use things like vitamins, minerals, and nutrients that are found not only in food but in our bodies that the body is using it every moment of every day to create physiology, to create function?

[03:31] He found through his research that you can use doses of these molecules, naturally occurring vitamins and minerals and other molecules. If you use them in the right dose, at the right time, you can start having a very, very powerful physiological effect. This is different than just getting nutrition through your diet. That's the first important differentiation, and the distinction is that this is not nutritional medicine.

[04:01] Nutritional medicine is what sustains a person on a daily basis. What are the foods that you are eating, and what are the nutrients that are essential for our body's function? What Dr. Pauling was talking about, he was using higher doses, and he used the term supraphysiological, which means higher than what your body normally would get in the diet to have a more therapeutic effect.

[04:30] So, there are a couple of reasons why you might want to use a higher dose of something. First of all, if a person is deficient, you probably want to use a higher dose to get that level up quicker. I use the analogy of a bucket or an empty bathtub a lot with my patients, specifically around vitamin D.

[04:50] We're in Canada, and vitamin D is a very deficient vitamin here in the Northern Hemisphere. Patients always ask, "What's the right dose of vitamin D?" Vitamin D is a perfect example of an orthomolecule. It's found in some foods, and it's a natural vitamin. The response that I give is, "What are your levels?" Oftentimes, we test their levels, and they're very, very low.

[05:13] So, using the analogy of a bucket that's empty or a bathtub that's empty, I tell my patients that "If you want to fill up your bathtub, do you want to sit there with a teaspoon and try to fill up your bathtub?" That would be the same analogy as using Health Canada's recommended dose of 1,000 IU, international units, of vitamin D. It's more of a maintenance dose.

[05:37] If your levels in your bathtub, or we're using the analogy of levels of vitamin D in your body are perfectly normal, then you're going to be just fine with using that teaspoon dose. But the majority of people are majorly deficient, and some of them quite so. We need to use a higher dose to quickly suprasaturate or have a supraphysiological effect to get those levels back up.

[06:06] Once a person understands that analogy, they get their head around what orthomolecular medicine is. There are numerous examples of how we can use that principle that Dr. Pauling came up with for the betterment of our health.

[06:26] Specifically, for Dr. Pauling, he was looking at two main areas. He was looking at mental health, and he was finding that using higher doses of B vitamins, specifically B3, and one of his contemporaries and colleagues, Dr. Abram Hoffer took this to the next level. These are two names that you should know. These are like godfathers of the nutritional supplemental world.

[06:55] They were using higher doses of B3 to treat very treatment-resistant conditions like schizophrenia and depression. They found that when you were using these high doses, you actually had almost a drug-like effect. But, here's the kicker, and here's the other important piece about orthomolecular medicine: these very high doses, they found they were very, very safe for almost all the people that they were using them on.

[07:28] Here is another example that Dr. Pauling was studying and using, and probably what he's most famous for. He was using high doses of vitamin C or ascorbic acid in terminally-ill cancer patients. He found that when you're using higher doses more than just the couple hundred milligrams that are recommended by typical regulatory agencies or government agencies—but you're starting to use gram doses.

[08:01] Vitamin C is a water-soluble vitamin, and anything more than what the body can use is going to be excreted. So this makes vitamin C really, really safe because the excessive toxic accumulation can't happen.

[08:18] Dr. Pauling started studying this and started having some really, really great effects. He was actually using vitamin C intravenously, meaning directly infused into your veins. There are a lot of integrative health care practitioners that are using this approach—intravenous, ascorbic acid for all sorts of conditions probably most commonly known for cancer.

[08:39] At the time, obviously, with any sort of change in the way that a doctor does things, there were skeptics, there were critics, and they were saying, "Well, this is not really having an effect." A lot of the skeptics were looking at using those small doses of vitamin C, and they found that they didn't have the same effects.

[09:01] But the secret to Dr. Pauling's approach, and this is the crux of orthomolecular medicine, was that he was using a much higher dose, and he was using it intravenously, which is even higher than you can get orally. But you can easily apply that to any oral supplementation.

[09:17] Vitamin C often is used in conditions, for example, of stubborn chronic constipation. So people are using much higher doses of vitamin C, and we actually use the fact that it can loosen our stools at higher doses for patients that have very stubborn stools. That's one example of using a nutrient that is found in fruits and vegetables, but using it in higher doses and using it supraphysiologically.

[09:45] There is also this idea that everything should come from food. This kind of flies in the face of orthomolecular medicine. Now, as a naturopathic doctor and somebody who is a huge proponent of diet, I couldn't agree more that the majority of the nutrients that we get, and I say majority specifically because there are some nutrients that are simply not found in high enough doses in our food supply.

[10:14] Vitamin C is one of those things that is found in our food supply, but it's found in very small, maybe a couple of hundred milligram doses. So this is great for maintenance. But

consider a couple of things. This is one of the main reasons we need orthomolecular medicine. We need to look at supplementation.

[10:32] A lot of times, we have a supraphysiological, so a greater than what you find in diet, need for nutrients. That is why we may need a supraphysiological dose. For example, think of the people around you. Maybe even think of yourself, somebody that is under a lot of chronic stress. That's the affliction that is in our current society.

[10:57] There are nutrients that help us deal with stress. Vitamin C is one of those nutrients. When you're stressed, you typically are not eating as well as you probably want to be eating, and you probably aren't getting as much vitamin C as you should be getting.

[11:13] Also, consider that there are certain situations, like intestinal inflammation or medications that inhibit the absorption of nutrients. A great example is something called acid blockers are proton-pump inhibitor medications. These are very commonly prescribed medications. Typically, they're given for any sort of digestive issues.

[11:38] If somebody comes in and they say they have nausea, or they have a little bit of reflux, or they have digestive discomfort, the first thing that your family doctor will try is this class of medication.

[11:50] Now, we can talk about that in another episode on what are some of the risks of medications and how they should properly be used. I'm not saying we shouldn't use medications, but we have to consider that medications do have a downside, and that is that they actually can deplete some nutrients. Some of those are better known than others, and the example I'm using with proton-pump inhibitors is that you're not going to be able to absorb many of your minerals.

[12:18] In fact, a lot of the proton-pump inhibitor medications are now starting to have the warning on them to say, "It may cause low levels of magnesium." Magnesium is one of the most important minerals in our bodies for maintaining muscle function, maintaining nerve function.

[12:36] It's incredibly important for the blood flow throughout our whole bodies, for cardiovascular health. You can go down the list. We'll talk about magnesium in another episode because it's that important, but it suffices to say right now that there are things that are competing for the absorption of our nutrients.

[12:55] Lastly, consider that the change in our environmental and our agricultural practices may not have as many nutrients in our foods as we like to think. So we actually can see the nutrient levels. If you look at some research that is available, you start seeing levels have gone down over the last five decades.

[13:18] That's again, if you think about the historic agricultural practices, there were things like crop rotation, meaning like if I had four fields, I would only plant three of them. Then every other

year, I would rotate through that empty field, so one of the fields would always be empty. The idea is that an empty field would have crops planted in it that are not harvested, that are then tilled under, almost like fertilized. That's not happening because of the mass amount of people and the demand and the money that goes into some of the commercial large-scale farming that's happening when it comes to vegetables specifically.

[14:00] So, you get lower levels than you need. To summarize, you need higher doses of nutrients, more than in your diet, because

1. You might, because of your situation, stress, for example, or intestinal inflammation if somebody is struggling with food allergies and Crohn's, colitis and other sources of intestinal inflammation. That would be one of the first reasons why you need higher levels.
2. You actually may be depleting some of your levels with certain medications or things that a person is taking. These can be very common medications. For example, something like Advil can cause intestinal inflammation, which decreases absorption. So, common things that people are taking every day.
3. Our diets, the foods that we are eating every day, may not have enough nutrients or as many nutrients as we think that they have.

[14:57] Those are the three reasons why we need orthomolecular medicine. If you're taking any sort of nutrients or vitamins, you probably have been trying out orthomolecular principles if you've taken higher levels of them.

[15:14] What I want to focus on for the rest of our show is looking at how is orthomolecular medicine applicable to you, and what are some of the most common examples that have research behind them and are effective introductory ways of introducing orthomolecular medicine?

[15:36] Before we do that, I think it's important to understand as part of understanding orthomolecular medicine in general is, where does orthomolecular medicine fit in in terms of our medical system? Let's start with that.

[15:51] We've heard, obviously, of things and professions like naturopathic medicine, and homeopathic medicine, and chiropractic medicine. These are regulated in some states and provinces. This is a whole way of thinking and practicing medicine. This is different than orthomolecular medicine because somebody that is a naturopathic doctor, like myself, can practice orthomolecular medicine or principles of orthomolecular medicine.

[16:23] Orthomolecular medicine itself isn't a profession, but it's a way of thinking and practicing medicine or practicing bringing about better health. You could be taking high doses of vitamin D and be practicing orthomolecular medicine yourself. Or you could go see your naturopathic

doctor, and they give you high doses of vitamin A, short-term, for acne, for example. That would be an example of them giving you an orthomolecular prescription or orthomolecular recommendation.

[16:58] That's how it fits in. So, anybody can use orthomolecular medicine. In fact, when I attended the orthomolecular conference, and there's a group here in Canada called the International Society of Orthomolecular Medicine. The conference was hosted in Vancouver last year.

[17:17] The majority of the people there were medical doctors. They were medical doctors, naturopathic doctors, nutritionists, people from the public that were interested in orthomolecular medicine. So, it has followers and accolades from many walks of life. I think that speaks to the broad range of applications that orthomolecular medicine has.

[17:41] There is also the term called functional medicine. If you're in the natural health space, you've probably heard of it before. It's very popular in the U.S. There are a couple of organizations that are now grown to be quite big with really big followings and international conferences that have started to certify primarily medical doctors in more natural ways of thinking, which I think is incredibly valuable.

[18:08] One of them is called The Institute for Functional Medicine. A medical doctor that is now starting to realize, "You know what? My patients are benefiting from changing the way they're eating. My patients are benefiting from using nutrients and supplements. I need to know a little bit more about this." So, they would attend one of these functional medicine conferences.

[18:30] Many principles that functional medicine, which only started in the last 10 to 15 years, becoming popular, they have been using and advocating orthomolecular principles ever since they started. Orthomolecular medicine has been around for a lot longer.

[18:51] There is a strong international following of orthomolecular medicine. For example, this next year, the conference is in Barcelona because there are a number of Spanish and Japanese, particularly from these countries where they're very passionate about orthomolecular medicine. Primarily, these are medical doctors.

[19:11] That, hopefully, gives you a little bit of insight and context on where orthomolecular medicine fits in. You can practice orthomolecular medicine just by using higher doses. Now, higher doses don't necessarily mean unsafe doses. I think this is one of the key principles that Dr. Pauling drove home was that he found that when you did use high doses, unlike pharmaceutical medications, which, as the dose goes up, the toxicity level goes up along with it.

[19:42] Using these natural substances, you can actually have very high doses and still have the very safe effect. A lot of this has to do with the character of the nutrient or vitamin. For example, using a fat-soluble vitamin, like vitamin D, you have a much higher risk of toxicity.

[20:00] The reason is fat-soluble vitamins, like vitamin D, E, K, and A build-up in fat. That's why they're called fat-soluble, meaning they are dissolved in fat. Then, there are things like water-soluble vitamins like B vitamins or vitamin C that don't have that same type of build-up, so their safety profiles are even better.

[20:23] My point about the fat-soluble vitamins is that they still have a very good safety profile if they're used short-term. What I mean by short-term is three months to six months. That's short-term in a lot of orthomolecular medicine circles. But always, from a safety perspective, talk to somebody that has experience and training in orthomolecular medicine—a naturopathic doctor, orthomolecular practitioner.

[20:52] That's going to ensure that you're going to be getting the best dose that is safe for the duration and timing. There are certain things that you obviously want to watch out for, and of course, doing some laboratory testing. That's the first step that I do with patients.

[21:05] I mentioned vitamin D. One of the most commonly supplemented vitamins, and most people are taking it without getting their levels tested. This is a small investment, about \$30 here in Ontario, maybe a little bit more, but even if I had to pay \$50 once a year, especially if I'm living in a Northern Hemisphere, and even if I'm not, actually.

[21:27] There is a lot of research showing that it has to do with your ability to convert vitamin D from the sun. So, most people are indoors now. They're not getting enough. So even if you're living in a warm climate, you're still going to be at risk for vitamin D deficiency.

[21:44] Vitamin D is something we're going to talk about in a separate episode because it's just so incredibly powerful and actually is a neurohormone. But the point I want to make here is that you need to test levels to know what you should be supplementing, and then working with a qualified, knowledgeable healthcare practitioner will help you determine what levels you should be taking.

[22:09] So that gives you a little bit of context on safety and on the administration, application of orthomolecular medicine, and where it fits in. What I want to focus on for the last little bit of this episode is what are some of the specific examples? How can you apply orthomolecular medicine?

[22:31] This is the *AOR Show*. I talked about AOR standing for Advanced Orthomolecular Research, because back in the 1990s when AOR was started, there were not very good orthomolecular nutrient, vitamin options in the market. It was started by Dr. Traj Nibber, who is a Ph.D. Pharmacist, originally from the Ottawa area, and now AOR has been relocated to Calgary.

[23:02] He came up with the idea that you can use some of these nutrients, and he was supporting an AIDS population. So, if anybody saw the movie, *Dallas Buyers Club*, it was a vitamin buyers club that was something that he started. It was almost started out of need. It

grew because people were looking for good quality supplements. They didn't find any of those on the shelves. There was nothing that existed. The story of AOR and its roots came out of, "We need to find a way to get these well-researched nutrients out to people that need them because there wasn't quality on the market.

[23:46] Specifically, AOR, the last word is research because there still needs to be a lot of research that's done. There is research that has been done; it started with Dr. Linus Pauling and Abram Hoffer, and Matthias Rath. These are some of the pioneers of natural and orthomolecular medicine. But there's more research that needs to be done, and that's something that AOR is very passionate about.

[24:10] They've evolved the definition that Dr. Pauling suggested to the right molecule, in the right place, at the right time, at the right dose, and in the right form. Dr. Pauling talked about the right molecule in the right place. AOR added the right time, the right dose, because that is going to give you further quantification of how it is orthomolecular. All those things ideally should be satisfied for it to be truly optimal for a person's health and truly orthomolecular. That's the evolved definition.

[24:49] In many ways, AOR as a company has forged and promoted the kind of good work that Dr. Pauling started. AOR is proud to continue on that work. So, how is a lot of this applicable to you listening? I mentioned things like vitamin D. I mentioned things like magnesium. These are nutrients that are so incredibly important, probably some of the most commonly used.

[25:19] I'm going to be doing shows, and we'll be having guests throughout the weekly shows that we're doing. We're going to be talking about a lot of these nutrients, and I'm going to be breaking down some of them in a lot of detail, so you're able to apply some of them yourself. But, I want to bring up a couple of examples that you can start looking into right away.

[25:37] Vitamin D, as I mentioned already, is the first thing you should look at is get your levels tested. That's how you're going to know, do you need an orthomolecular dose? Are you okay with what you find normally as sun exposure? Just because you're in the sun doesn't mean that you have optimal levels. You should get tested. 25-hydroxy vitamin D is what you should be asking your doctor for. They'll know what to ask for.

[26:06] Vitamin C is probably one of the most well-known. It's a water-soluble vitamin. Its primary role is around our cells. Our cells are not just jammed together. Our body also has a lot of space between our cells. That's where a lot of communication happens. Vitamin C is an important antioxidant.

[26:24] There are some people that need higher levels of vitamin C. This is a good example that I didn't touch on before, but there are some people that need higher levels of vitamin C as almost an additional antioxidant protection because, on our genetic level, we don't have as many of our antioxidants.

[26:46] For example, SOD, superoxide dismutase, is something that we'll get more into when we talk about genomics, but we need higher levels of antioxidants. Vitamin C is a perfect example. Getting it through diet like red peppers, oranges, and a lot of those colourful fruits and vegetables are important, but using higher levels, especially when a person is under stress, when a person's stools are sluggish, or when a person wants to deal with any kind of cold or virus, vitamin C is important to the immune system. That's why it has always been traditionally used for that.

[27:24] On the immune system category, I think vitamin D is also very important for your immune system, so that's something that shouldn't be overlooked, but specifically zinc. Zinc is a really important mineral when it comes to our immune cells. Zinc found in small microdoses throughout the body are in diet but are not enough to boost the immune system. I would say zinc is a great idea, especially if somebody is looking to boost their immune system.

[27:58] The other big thing with zinc is that it's important for mood function, it's important for nerve function, and it's important for the production of some of our hormones—for example, testosterone. A good evidence-based dose of zinc is 15 milligrams, and some people need much higher levels. I recommend taking it with food because it's going to have a little bit less of that stomach-irritating factor. It's not harmful, but it's just one of those things that happen. Some people get a little bit nauseous with it.

[28:25] Those are three examples of good orthomolecular nutrients. We're going to be diving into a lot more of those. That's a sneak peek into what the *AOR Show* is going to be about. Hopefully, you will have found that this is a good foundation as a springboard to get into some of the more advanced topics. You'll be tuning in on a weekly basis to listen to myself, and a lot of the other experts that we're going to be having, to understand how to apply orthomolecular medicine to optimize your health.

**** Music break****

[29:14] Thank you for listening today. For more information about our guests, past shows, and future topics, please visit aor.ca/podcast. Do you have a topic that you want us to cover? We invite you to engage with us on social media to request a future topic or email us at marketing@aor.ca. We hope you tune in again next week to learn more about supplementing your health.

**** Outro Music ****

[End of episode 29:44]