Introduction and Guest Background

Hey everybody, Dr. Rob Silverman here, Proving Health Alternatives. I've got the guy who's going to talk about creatine, and we're going banter about Creatine Monohydrate versus CreatinHCL.

We've Mr. Mark Faulkner. How are you, Mark? How you doing today? I'm very well. Great to see you and thanks for having me on. Well, I'm excited about this topic because, as I told you before we started, 26 years ago when I graduated chiropractic school, we were the first school to have to write a thesis, and my thesis was on creatine.

So to get you here and to delve in on Creatine Monohydrate versus Creatin-HCL, creatinine in general, Creatined Monohydrate being the most talked about subject matter in nutrient supplementation now, i'm happy to having you.

Here, so why don't you do us all a favor? Tell us a little bit about your background. How'd you get into creatines? Certainly. Well, my background is in science and a lot of physics, biochemistry, toxicology, et cetera.

But I really got into it because myself and another gentleman co-founded a forensic toxicologist laboratory. And our specialty was athletic drug testing, performance enhancement drug, testing and our original team.

developed the steroid testing program for the National Football League and we spent a lot of time working with elite athletes and and seeing that that they were managed or monitored for performance enhancement compounds and many of them back in the day were using steroids and they said okay great you're taking away our steroids we don't do this because we're trying to be bodybuilders they actually help us do our job and really nothing else on the market right now works.

So if you're taking our steroids away, find us something else that helps us with strength, endurance and recovery. Steroids we acknowledge are not safe, not healthy, and not legal.

When I sold out of the laboratory, I started working with some sports medicine researchers trying to find something that was safe healthy and legal that would help these guys do their jobs.

Because as they said, if we can't perform, if we can't recover. there's a dozen other guys ready to take our roster spot, and this is how we make our money and feed our families.

And we only have a limited amount of time in which to do this. So yes, we get paid well, but we really have to make hay while the sun shines. We started looking at all sorts of peptides, amino acid conjugations, new forms of creatine and things to try to see what would be safe, healthy and legal that would support their strength, their endurance and their recovery.

It was back in January of 2003, that we actually made a mistake on a peptide batch, added the wrong amount of acid catalyst. And the ensuing molecule that was formed was something that, we could tell wasn't our target ion.

We set it aside and went back to making what we were intending to make. Then eventually went and said, well, what was this that synthesized or formed from this mistaken batch?

And it was creatine hydrochloride, was the molecule that had been formed. And we began studying it.

What Creatine Is and Why It Matters

In over about six years of research, we determined that its stability, its solubility, it's bioavailability, Its plasma uptake, It's ability to provide creatinine to all cells of the body, muscles, brain, immune cells, et cetera, Was profound in terms of how it could do that at lower doses without any of those side effects that have been you know,

previously anecdotally associated with some of the other forms of creatine, the bloat, water retention, puffiness, and GI distress and things.

And so when we decided, okay, this molecule is interesting enough that we ought to try commercializing it, I came up with the name CONCRETE, which stood for Concentrated Creatine.

Concrete, so that because it was like a concentrated molecule, because you could take such a small dose and effectuate more results. And when I described the data and the research that we've been doing to the guy that was at the time the VP of Sports Nutrition for GNC, he looked at me a little bit, I don't know, kind of skeptically, and he said, if what you say about this molecule is true, it will revolutionize the creatine market.

I said yeah, think it It has in many ways, it became the number one creatine in the specialty retail market. And now it has proven itself in some very unique ways.

Creatine, in general, whether it's creatinine monohydrate, creatines hydrochloride, Creatines citrate creatina, ethyl ester, they're all delivering createne to the body, which Arguably creatine is the most important supplement people can take.

When you think about zinc, vitamin D, fish oil, protein, all these wonderful supplements, that's a pretty big statement to make that it's the more important.

Those all are very important, but not much matters if the cells don't have enough energy to use those other nutrients. and the rate limiting molecule on cellular energy is creatine.

And so these conjugations of creatines really can be efficiently, do they deliver creatinine to the blood compartment and then to create a transport system to get it into the various cells of the body, not just the muscle cells, but immune cells brain cells heart cells everything.

So the efficiency of a molecule makes a difference. Creatine monohydrate does some things very well, and it certainly is the most studied form of creatine because it's been around the longest.

People don't talk much about the fact that it also has the more failed studies. That's a good point. I want to interject because you gave a lot of information.

You gave lot a meat on the bone there. So let's take a step back. We agree that the bulk of the data is on creatine monohydrate. The newer guy, where you've done a lot of studies, is creatinine HCl.

So, let just take step and talk about creatines. Let's give an overview. It builds muscle, it fuels brain resilience, enhances moods, and supports cognitive pathways through exercise-driven biochemical pathways.

This is actually a muscle to brain axis, which helps with myokinesis. The real question is, what is creatine? Now, we were talking about that before. It's three amino acids.

So you're teed up. Yeah. Creatine is a very beautiful conjugation of glycine, methionine and arginine. And they form this compound that is really the energy currency of the body.

rapid recycling of ATP, adenosine triphosphate, and that does fuel every cell of the body. And one of those really important functions that creatine helps to provide in the bodies, one really key one is our immune system.

The T cells that protect us from cancer, viruses, bacteria, et cetera, are absolutely dependent upon creatines in order for them to be virulent and strong and able to go in right.

So all of those systems you mentioned, plus the immune system, are really truly counting on creatine in order for them to function optimally. It's a natural molecule, endogenous to the body.

The body synthesizes a portion of what we need, and the rest is supposed to come from our diet. Unfortunately, over 65% of Americans do not get enough creatines in their diet, So their foot cells function, they just don't function optimally.

So creatine ADP to ATP. It has a mitochondrial function. We now know, if you listen to the podcast, that mitochondria has secondary function which helps the immune system.

That may be the pathway by efficiently producing ATP and stimulating the appropriate complexes in the mitochondrion. ATP production may be optimized. Now, I wrote my book, Immune Reboot.

So you say immune function. Most people don't realize creatine helps with immune functions. To reiterate what you said, it may support immune functioning by providing energy to immune cells acting as an antioxidant and influencing inflammatory pathways.

It can enhance the function of the T cells and neutrophils. Creatine is energy and immune cell.

How Creatine Works in the Body

But how does it work in the body? Most creatine from either food sources obviously is ingested or supplements are taken in and then through the GI tract it gets introduced into the blood compartment at Depending on the conjugation of creatine, it's introduced or it absorbed at varying rates or percentages.

Creatine hydrochloride happens to be the highest rate of plasma uptake. But once it gets into the blood, whether it comes from monohydrate, HCl, et cetera, then that creatinine gets taken up by the creatines receptors, the creating transport system into various cells and is stored in the muscle cells largely, but it's also stored the brain and in testes and things.

Men store more creatine than women, and so women oftentimes need to pay more attention to their dietary food sources of creatines or their creatinine supplementation.

for their cells to be able to all have optimal functional energy. Why do men store more than women? You know, it's so funny we have this tremendous dichotomy between men and women in reference to absorption of supplements, changes in hormones, muscle mass.

Do you have a direct reason why women are having a greater problem? Yeah, it is because women carry less muscle mass and muscle is where a lot of the creatine is stored and then the creating is used by the muscles or the body can scavenge creatinine from the muscle stores for use with the immune system or brain or other systems that are needing the Creatine at a particular time.

So yeah, it's all about muscle mass storage of creatine that causes women to not generally have as much stored and available for their use. Women have is much muscle, mass per pound from the waist down as men.

They have a little less upper body, but they weigh less. So that speaks to what you were saying about the idea of muscle mess. What foods would you consume to get creatinine?

Probably one of the top foods is herring. But if not, everybody eats a lot of herring every day. So then you follow with red meat. And generally, the thought is that you need to have red or any meat, whether it's herrings, fish, et cetera, that is lightly cooked.

Because if you overcook the meat it will destroy the creatine or cause it to cyclize. And so basically meats that are red or some fishes, that's where you're going to get your stores of creatine, but it's animal protein.

So people that aren't vegans or vegetarians or have a plant-based influence of their protein intake usually are short of creatine in their systems and their diet and generally have a need for supplementation.

Let's do a little rapid fire. I think we'll have some fun with creatinine here. Number one, most people associate creatines with bodybuilders, correct?

True. In the past, that's been true. Thankfully, it's giving way to an understanding that there's a true overall body medical need for creatine to optimize our health.

The appropriate amount to dose per day is 5 to 10 grams, pending. What about a loading dose of 20 to 25 per week? I'm going to say that for most people, a load dose is never needed.

And I am going say 5-10 grams per days is only applicable with creatinine monohydrate. Because you have to take that many grams in order to get about one gram into your system.

And that has to do with the molecular efficiency. Which I know you're going to detail for us, which is very exciting about your new data. You've got to create creatine with sugar to put it into the muscle cells.

False. I should put creatine in my coffee in the morning, my hot coffee. Yeah, false. The heat and an aqueous mediums will cause an accelerated cyclization of creatinine, any creatines into creatamine.

So no, no hot. Coffee. We can put collagen in our coffee, but we cannot put creating in her coffee I can take creating before a workout, during the workout and after a work out.

True to some extent, I prefer it before because it helps with endurance and strength during strenuous exercise.

Food Sources and Basic Dosing

Afterwards helps recovery, but the residual creatine that you take before also helps in recovery. So it's good really at any time, for streneous exercise and for optimal athletic performance or fitness active lifestyle performance, I like it 30 to 60 minutes before so that it peaks about an hour later in the blood and is providing the energy that you need during that workout or that exercise to have it be more fruitful.

I usually take it Solomente. The one thing that I really do like creatine with is with a nitric oxide booster, a really good citrulline because as you're delivering more functional energy, you still need good oxygenation of your cells if you are going to be active so that you can keep up a good wind and not get gassed as quick.

And the best citruline, the two main citullines that have been on the market, L-citrulene and cituline malate, I think are giving way to citrulline HCl.

And that one is a more efficient molecule. But yeah, I like creatine before strenuous exercise with a nitric oxide support. I love that idea. I don't see a lot of formulas that have that.

So I'm going to go down a couple of lists of the usual suspects. Number one, what about taurine with creatine? Taurin is excellent. Yeah, I would say that would might be number two behind the citrulline.

But yes, it's good. How about leucine, especially dilucin? Yeah. The branch chains and leuccine isoleucines, valine those things are good I typically like those after a workout as a part of recovery.

Glutamine is a great molecule. It really helps with muscle building. I think it can be taken before or after. How about creatine with a protein powder, one that we both like?

We'll leave it like that. Yeah, and I would say that creatinine, with protein, is great. Again, that would be more after workout and i would make sure that it's a a protein isolate so that you make sure that, uh, you're getting really good usable protein and not a lot of lactose fillers.

Interesting, interesting. You're gonna turn the market upside down. So, creatine monohydrate versus creatinine HCl. I know this is what you are most excited about talking about.

With all due respect, we're giving a lotta respect to creatines monahydrates. But you did say that creatined monahydrate you need a higher dose. Creatine-HCl you needed a lower dose?

Why don't you take the baton and run with that? Yeah, certainly. Creatine monohydrate, as I said, is a good molecule. If I were an NFL lineman, I would absolutely take creatine my hydrate because I want strength and bulk.

I wanna be able to not have a 300-pound person across the line pushing me around. And that's what creatinine-monohidrate is more of a bulking form of creatines.

It will cause, for most people, the majority of people who take it, they will have more water retention, more kind of a little bit of puffiness or bloat.

Some people unfortunately experience a fairly significant GI distress, you know, in the form of gas or diarrhea or such things, but many people don't, so that's fine.

When it comes, monohydrate for strength and bulk, creatine hydrochloride for strength and leanness. And I'm going to give a two-part answer on that. The first part is that you take a smaller dose of creatinine HCl, and it delivers more creatines to the cells and to blood compartment through the bloodstream, which distributes it out throughout the body, than a large dose creatined monohydrate.

Monohyhydrate just isn't as efficient in terms of its uptake.

Monohydrate vs HCl

There was a really good study out of the University of Manitoba that was published, journal pharmaceutical study on tagged creatine monohydrate in 2018 that showed that out a five gram dose, approximately 15% made it up into the bloodstream and 85% of dose just simply got excreted, which is why because it has limited efficiency in the GI tract, it's why you have to take more in order to get you know, a therapeutic amount into the bloodstream.

The ratio of creatine monohydrate to creatinine HCL in terms of delivering creatines to the cells is probably between five and seven to one. So that a five gram dose of creatine monohydrate is probably equivalent in terms of the creatinine delivery to about a 750 to 900-milligram dose of Creatine HCl.

So, Creatin HCL will support strength, but more leanness. There are some new research findings that are tending to have us think that there may even be some other different pathways from how the body processes the different creatine conjugations like monohydrate versus HCl.

Recently, Dr. Sergey Osteuch, who is out of Norway, generated a study that showed that very low doses of creatinine HCL could create significant increases in metabolism, whereas large doses of creatine monohydrate struggled to have that sort of effect on the cognition and the neuron energy.

So besides the uptake, there appears to be, once it's in the body, some different pathways that we have yet to understand that allow different conjugations to to be more efficient for certain areas.

We've always thought that the molecule dissociates and that it's just simply creatine in the bloodstream, but it seems unique with regard to the way that creatinine hydrochloride can have some positive clinical outcomes on certain circumstances like brain energy, which impacts menopausal women with brain fog, or people with chemo brainfog.

We have neurodegenerative and other immune research that's going on that shows that creatine HCl is able to drive those cells involved and drive these conditions to better outcomes compared to monohydrate.

You just have to have more understanding of the mechanisms of action. Those probably are a couple of the main differences. The bioavailability and the absorption of monohydrate at a higher dose versus more efficient plasma uptake and bio availability and absorption at low dose of creatine hydrochloride, and then the ability of to get into

certain cells or systems in the body that monohydrate doesn't appear to be able to do.

Dr. Lily Yang at UCLA had a really interesting study on how if you can get creatine to the T cells, they have more energy and do a better job fighting to keep us healthy, they strengthen the immune system better.

And Dr. Mary Phillips at Vanderbilt also had a beautiful study that showed the T cells will fight and fight, but they become exhausted if they don't have enough.

What some of this research shows is if we give them enough energy, They win every time. They'll kill a virus, kill the cancer cell, whatever, But they just unfortunately get fatigued and have to succumb.

So one of the things I wanted to ask you, which I think we covered, was the dosing. So HCl would be half the dose of monohydrate? No, but really five to seven times less.

Wow. Generally, the number that we typically have from the Pharmaceutics Journal research and from our own studies internally, we determine about a seven-times lower dose will deliver effectively the same amount of creatine as a five gram dose.

So 5,000 milligrams versus 750 milligrams. If I'm conservative, I would say five times difference, but really the data points to a seven times more concentrated version because of that higher absorption rate.

distinctive amount. So let's really talk about creatine for women. We established that the reason that women need creatinine more is they have less muscle mass because they lower body weight and a little less muscles mass for upper body as compared to men.

I've got a whole bunch of points, so we'll take them point by point and see where we go with this. Creatine actually supports hormonal transitions, which you talked about.

Creatine actually curbs athletic performance reduction during transitional phases by regulating hormone levels. We're good with that. Yes. Yeah, it does.

And it it simply helps to create greater recovery of all cells. when there's strenuous activity taking place because that ATP is recycling faster, because the creatine will help re-phosphorize the ADP, the adenosine diphosphate, into adenosine triphosate which then the cell can use as fuel.

Well, you knew my second point, improves exercise performance. post exercise recovery and injury prevention. Third point, helps build muscle and reduce fat.

So it helps avoid sarcopenia. Sarcopeny, the loss of muscle mass and muscle strength. It is the longevity organ muscle-mass. And so it's fair to say that creatine is a longevity nutrient.

Creatine for Women, Longevity, and Cognition

That's at the top of my list. Yeah, it absolutely is. We're seeing lots of indications for which creatines is providing a positive effect on the underpinnings of longevity.

And as you said, one of the key ones is muscle mass and avoiding sarcopenia or muscle wasting. We are just now kicking off a sarcomenias study with creatine in elderly because it impacts quality of life.

It reduces them having or being a fall risk. If you can maintain that muscle mask, you're going to maintain a better quality life and creatinine protein and exercise are key to that.

But everybody talks about creatine with exercise. There really are emerging positive benefits for creatinine even without exercise, that creatines will help with maintaining that muscle mass, help maintaining cognition, your overall health from a strong immune system and things.

So yes, it absolutely is critical to longevity. Creatine also helps boosts mood and cognition function. It improves executive function, processing speed, balance, mental fatigue, mood state, short-term memory.

How does it do that? Well, It does that from all of those optimizations of cellular energy and functional cellular activity. but a really key study that just came out that addresses really all of those things that you just enunciated.

is this journal that Dr. Osteuch that I mentioned earlier just published in the Journal of American Nutrition, JANA, Journal Of American nutrition Association.

And it's a beautiful study looking at executive function, reaction time, alertness, cognitive focus, all of that. It had to do with creatine without exercise and just tracking low dose support And it demonstrated that those functions were significantly supported or improved in the group's HCl, creatine hydrochloride, compared to placebo.

And we know that, those function, when it comes to creatinine monohydrate, can, yes, be supported. But instead of at 750 milligrams, or even a double dose, 1.5 grams, 1500 milligrams of HCL, it takes 10 to 20 grams of creatine monohydrate in order to achieve those same functional supports that you just spoke of.

Frankly, 20 grams a day of creatine monohydrate is tough for most people to sustain. It's tough to choke down that much of anything. Yeah, I haven't loaded for anybody in 20 years.

The data wasn't even there 25 years ago when this was in its infantile stages of talking about creatinine. And it was just a question of, would it help with muscle mass?

But now we're talking cognitive function. We're taking about them, queuing you up again, improving bone mineral density. Yeah, and that just has to do with part of the body's functions in recovery are recalcification and the turnover of cells and cells are able to turn over, repair themselves, replenish themselves much better when they have optimal cellular energy, which means when the have optimum creatine.

And lastly, it helps with short-term sleep or sleep deprivation. Yeah. I just, I had back-to-back trips. Each four days to Spain and back and then to China and I did not sleep well on the planes, maybe two or three hours each with each trip and going over across all those time zones, I should have been wiped.

I ended up boosting my dose of creatine hydrochloride and instead of taking 750 milligrams a day for basic, you know, health support, I took a triple dose.

So that ends up being a little over two grams and both before the flight, after the with each coming and going, and I never had jet lag. It's pretty impressive.

You can do the same thing with creatine monohydrate. it just happens to be at a higher dose. And then you risk some of the side effects, as I mentioned, the bloat and the water retention and things.

But creatinine is very impressive for helping those sleep deprived circumstances. you know, you don't want to do that too often because sleep is so important for your body to recover and to maintain health.

Creatine should not be used on a regular basis to supplant sleep, but certainly when you do have a bad night's sleep or a circumstance where you're just not getting good rest, creatine can help provide the temporary energy that is necessary to help get you through that period.

So, yeah, very significant. What should the consumers, the doctors, and the practitioners look for in a high-quality creatinine product? Great question.

First of all, most of the creatine in the market comes from China. There is some very high quality, high purity creatinine that comes out of Germany. That's createne monohydrate.

Sleep, Quality Standards, and Practical Use

Most of creatines in market is monahydrates still. And as I said, it's a good molecule. You just have to take higher doses to get an effect. Some of that creatins coming out China is high-quality.

It's very good. However, There's been a number of factories over in China that have kind of jumped on the creatine bandwagon because as you said at the start of this, it's become so popular.

People are realizing how important it is as a foundational nutrient and how many different parts of the body it affects positively. And so there's a, number, of creatines sources from overseas that are of very poor quality.

So you have to be very careful. The things that help to determine that something, whether it's from China, Germany, or like ours made outside of Omaha, Nebraska, we're the only American-made creatine.

The things that are great accreditation markers to focus on, seeing that your creatines is a quality that you can trust, are the following. Certainly, it has got to be produced in a GMP facility, good manufacturing practices.

Second, to have NSF certification, which means it's been certified safe for sport. Professional and amateur athletes can use it. So NSSF. TruShield is a great certification that demonstrates that it doesn't have contaminants or banned substances in it, and then probably one of the most significant ones is SQF Certification.

Sqf stands for Safe Quality Foods. There are very few creatines in the market that have achieved that level of certification. But those things, GMP, NSF, TruShield, SQF.

Those all will help a consumer know that they can trust the quality and that it's not going to have things in it that are not clearly described or defined on the label.

Outstanding. So let's close. Normally I close with my buddy who lives in Switzerland, and he always says, Rob, give me the one thing I can do. Well, he's already taken creatine.

Let's give him 10 things to share with other people to want to take creatinine, I'm going to spot you a few. 65% of people are deficient in creatines.

It can be gotten from food, it's faster in supplements. Women need creatins and respond better than men to creatined supplementation. You can take creatine on its own.

You could take it with some other supplements. Do not take with a hot aqueous solution. Take it before, during, and after a workout. Mark prefers it beforehand.

Rob prefers after. It's a kumbaya. Creatine monohydrate has the most data. creatin-HCl is the new kid on the block. And now, go for it. Hit a few over the fence for him.

Certainly. I would take creatine as a part of protecting my mental health and my cranial function.

Brain, Immune, Heart, and Cancer Support

It has been demonstrated, especially in cases of multiple sclerosis, in case of Huntington's disease and Alzheimer's Disease, there's some good case studies that demonstrate that it really does help maintain quality of life for those people.

So I take it for my brain. I absolutely take for the immune system. When COVID happened, I was around COVID positive people all the time. I took at least a double dose of creatine HCL every day and I never got sick even though I repeatedly exposed.

So brain immune. For heart function, cardiac disease is still the number one killer of people in the U. S. It has been shown that creatine, you know, your heart is your most important muscle and creatines supports all muscles, but it particularly supports your hearts.

So great for helping stave off heart disease and keeping a strong heart. And then probably Last is the things that people don't ever want to have diagnosed as cancer, besides heart disease, cancer is one of the main medical challenges in our society.

And as I've mentioned, Dr. Lily Yang's research, if you have a good store of creatine in your system, you're gonna have more active, more functional killer T cells in you body, and they're going to help keep you healthy against diseases like cancer.

They So those are four key re take creatine brain immu blast cells and aberrant cells, and carcinoma cells at bay? I'm going to add some legs to the conversation.

I use creatine in my long COVID protocol to piggyback on what you said before. My mitochondria protocol, which is very similar because long Covid. Believe it or not, I used it in Lyme disease and tick-borne infections, obviously neurodegenerative diseases, and without question, longevity, because of all that it does, it adds to improvement in muscle mass and muscle performance.

You know what? You and I are without a question now Batman and Robin when it comes to creatine. It's been my pleasure, everybody. Mark Faulkner, Dr. Rob Silverman, always yours in health, proven health alternatives.