Fix Your Cells, Fix Your Life: Why Membranes Matter More Than You Think Transcript

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Introduction and guest background

Hello everyone, and welcome to another episode inside of the Heart Attack and Stroke Prevention Summit. I'm one of the host doctor, Jack Wolfson, cardiologist.

And today I'm really excited for this conversation that is going to be new to a lot of you. But I have Justine Stanger here, and she received her degree from the University of Alberta.

She is currently recording this down in South Africa. So it's somewhere down there. So she looks nice and tan and nice and healthy as opposed to being back home in Calgary at this time of year.

And then she went on to, pursue a degree in holistic nutrition, through Bowman College. And then she also completed her functional medicine training through the Institute for Functional Medicine and is a certified functional medicine health coach.

And she was actually, worked under Doctor Bruce Hoffman, who is one of the well known holistic practitioners, for many, many, many years. And she's worked a lot of his complex illness patients.

And I tell you, I've never spoke to Justine, but she spoke to a lot of my staff, and my doctor is over here, a natural heart doctor. And they're just so impressed with your knowledge.

This presentation is sponsored by Body Bio. And we'll be talking about some of Body Bio's products, as well. The intention, of course, is to give you the best information, possible.

So Justine, welcome to the Heart Attack and Stroke Prevention Summit. Thank you for having me. I'm very excited to be here. I'm excited about this conversation, too, because I've been delving into this in the last couple of years.

Again, after, you know, just, you know, reading and learning and this whole concept of membrane replacement therapy. Why don't we take it off there? What?

What are the membranes that we're talking about? And why do we need to replace them? That is a good way to start, I think. Let's start by just explaining what our membranes are comprised of, and maybe just talking about the significance of cells within the body.

We are made up of 37 trillion cells, and we have about 200 different cell types. We also have over 500 trillion mitochondria. So when we think about the body, the body is compartmentalized from cell to cell with these biological membranes that are predominantly comprised of phospholipids.

And we have that same level of compartmentalization actually inside the cell as well. All of the different organelles have these biological membranes.

And if an organelle doesn't have a membrane, it's interacting with one. So the membranes are really, really significant. So when I say phospholipids, if we break it down to a really beginner level, we all know that we have macronutrients.

There's protein, fats and carbohydrates. And then we have micronutrients, vitamins, minerals trace elements. And the phospholipids would fall under the category of fats.

And so we do make these in the body.

What cell membranes are made of

They are considered a conditionally essential lipid because we do need to consume essential nutrients in order to synthesize phospholipid. So within the categories of macronutrients, vitamins and minerals, we also have essential nutrients.

And some of those essential nutrients are essential fatty acids. And we actually only have two of them linoleic acid or omega six and alpha linolenic acid, or the plant based form of omega three.

Now we can get into whether or not I think the downstream metabolites are also essential. I do believe that they're also essential. Just considering how inefficient the enzymes are in converting our parent oils to the downstream metabolites.

And I know that you agree with this. You would never tell somebody just to consume flaxseeds to support DHEA levels. We want to make sure that we're consuming caviar and good quality, wild fish.

Now, the phospholipids are making up the cell membrane. We have two lipid bilayer is on every single one of those 37 cells and 200 different cell types on the outer membrane is primarily phosphate title choline.

So phosphate, title choline is the most abundant phospholipid in the entire body, and it makes up roughly about 50 to 90% of the outer cell membrane. So depending on the cell type that we're talking about, I know we're focusing on the cardiovascular system here.

So if you think about the end of the glial cells, they're comprised of about 60% phosphate vital choline. Now we want to make sure that we are supporting facilitated choline levels so that we can support the structure, the function, the fluidity of these cells.

Then in the inside of every cell membrane, we have another lipid bilayer that's comprised of three additional phospholipids phosphate title ethanol, amine phosphate, inositol and fats the title serine.

So obviously when we think about the very foundation of our health, we have to make sure that we're supporting our body with these phospholipids so that we can maintain healthy cellular function.

And there's so many reasons why that's that's so critically important and is really, truly if we're looking at the very root of supporting an individual's health, we want to make sure that we're giving their cells what they need to do the work that they were intended to do.

And that's the beauty of using exogenous phospholipids. Excellent opening statement. Thank you. What about, you know, I've been teaching this year for a while, and I'm not going to say that I, you know, I mean, I stand on the shoulder many giants, and I can't even say where I heard this from initially, but the actual the brains of the cell that people would typically think is the nucleus.

You could ask any high school students and they would, you know, what's the most important part of the cell? And obviously every part has a function, but the cell membrane is really the brain of the cell that decides what gets into the cell, what stays outside of the cell, how cells communicate with each other, how they communicate with things coming in and things going out.

And then also, maybe comment on that and the importance again, and reiterating that, but then also talk about how there's another little sneaky thing that's part of the cell membrane and that's cholesterol, another reason why cholesterol is so important.

So maybe talk about that for a second. Yeah. So you're exactly right at that. Actually this was there was a researcher prior to Bruce Lipton that brought this to the scientific forefront.

And then Bruce Lipton was really the one that kind of made it public, that the membrane is really the brain of the

cell. We all believe that the nucleus was regulating everything that was taking place within the cell.

He removed the nucleus and maintained the membrane and saw that the cell still survived for weeks after after the nucleus was removed. So the membrane is this dynamic living structure that has all of our proteins, all of our peptides, all of our receptors, all of our ion channels, everything is found on the membrane.

So if you think about the significance of that when it comes to all of these disease processes that we see today, this is starting on a membrane level.

We have a breakdown on the biological membrane, which ultimately Jack is going to the phospholipid. It's interact. I don't want to go too much into the quantum world, but the phospholipids are really interacting with that exclusion zone, water inside the cell.

So because of a phosphate molecule there's a polar head group. So a water loving head group there's a phosphate group. It sits on a glycerol backbone which is a three carbon sugar alcohol backbone.

And then it has two fatty acid tails. And those two fatty acid tails are made from the dietary fats and oils that we consume. Those two fatty acid tails are hydrophobic.

And so the water loving head is interacting with that exclusion zone water. And if you know anything about that exclusion zone water in the cell, all of the electrons are going to concentrate along that biological surface or along the membrane.

The protons are going to get shifted away. There's a proton wire and we have this electrical gradient within the cell.

Membrane function, cholesterol, and fluidity

Those electrons are generating a charge in the membrane. So the phospholipids are critical. And that charges everything right. Health is about having a strong electrical charge.

When we lose that charge disease manifest. And so that's also the important relationship that the phospholipid is. Play more on that kind of quantum level than just the structure and function of every single one of those cells.

Now, cholesterol is a critical component of our cell membranes as well. And a lot of people, I think, forget this. We've been fed so many lies about cholesterol, and people believe that having high cholesterol is a bad thing.

Cholesterol is inflammatory. There's all these narratives about cholesterol, and we forget that it's a critical component of our cell membranes. And the problem with cholesterol is when we get access amounts of cholesterol in the membrane, and it interferes with the phospholipid concentrations, which are going to impair the membrane dynamic.

So you talked about the importance of cell, the cell communication, signal transduction. All of that is going to be impaired if we don't have that optimal fluidity, that optimal membrane dynamics happening within the membrane with optimal levels and and also optimal cholesterol levels.

But PC Jack actually regulates the entire cholesterol feedback system. So if you think about this from an individual, if an individual's not getting enough phospholipids to support repairing their membranes, and what is the body going to do?

It's going to upregulate cholesterol production. So we make cholesterol primarily in the periphery in the liver. Liver is going to upregulate cholesterol production.

That cholesterol gets carried on LDL particles. LDL is going to deliver cholesterol to the cell so that you can repair damage where there's damage in the membrane.

And that's the beauty of supporting with facilitated choline as well, where phospholipid phospholipid complex like the body biopsy. Because when you supply the body with adequate amount of phospholipids, you're regulating that entire cholesterol feedback loop so that the body knows we don't need to upregulate cholesterol production because we have adequate amount of these phospholipids to go in and repair the membrane.

So it really is like a phospholipid deficiency. Is what as what's happening. And then maybe you will get that increasing, cholesterol deposition etc. in the cell membranes, like you said, decreasing fluidity.

And then ultimately it all lines up in disease. Why are people's, inherent phospholipids? Maybe why are they deficient right out of it? Right out of the shoot, out of the vegetable canal, if you will.

Why is deficiencies need to start then? And how do these phospholipids phosphate have a colon, etc.. How do they get damaged. The oxidative process. How's that all happening.

So we make phospholipids through two primary pathways within the body. So phospholipids like I talked about before require essential nutrients. So if we use phosphorylated potato choline as an example we have to consume choline.

And we have to consume the essential fatty acids in order to synthesize phosphorylated choline to support our cell membranes. So if you're not getting in enough essential nutrients, if you're not optimizing your essential fatty acids, not optimizing the ratios of essential fatty acids, your body's going to have a hard time synthesizing these phospholipids to support your cells.

But we make us lipids through two pathways either the CDP choline pathway or the Kennedy pathway, or the D1 de novo synthesis and through methylation.

And that's through the PMA pathway where we take phosphate ethanol amine and we convert it to phosphate metal, choline to support membranes. And that's actually a very demanding process requires three methyl groups.

And so PC is a huge supportive tool for methylation as well, which a lot of people forget about. So when we have adequate amounts of PC so we have to so we have to make sure that we have all these nutrients to synthesize them.

Now we live in a world where we're bombarded by all these toxic salts. And I've heard you talk about mold many times at different conferences. So we have mycotoxins, we have air pollution, we have pesticides in our food.

We have a laundry list of things that we're contaminated with every single second of the day. We're living in a non-native MF with soup, which we know directly impair that electrical charge of the membrane and impair the tunneling of those electrons through, the electron transport chain or oxidative phosphorylation.

And so I believe that the demand, the assault is so high that the body is actually not even able to keep up with the demand of repairing cell membranes, repairing mitochondrial membranes, just because the damage is so severe.

That's where I have said many times that I really believe that supplementing with exogenous phospholipids, this is a non-negotiable. Today, if we want to make sure that we're giving our body exactly what what our body needs to go in and repair damage to ourselves, we have to make sure that we're flooding it with these essential nutrients so that it actually has the materials to go in and repair cells.

And we love it. Inflammation, you know, port poor redox ultimately, when we lose that electrical charge, and our redox potential declines, then we're going to have inflammation.

We have all kinds of these reactive oxygen species that are going to look for an electron to stabilize themselves, which they'll often steal that electron from the cell membrane, impairing the membrane more.

So then we end up in just this really vicious cycle of continue membrane damage, and we don't have the materials

to go in and actually repair that damage.

Okay. Food first. I'm sure you agree. As you said, you can't live on. Although flax seeds would not be the best, option. You mentioned seafood. I'm a huge, huge seafood guy.

I tell my patients, everybody who lives and including myself, eating seafood on a daily basis, tremendous or so, of course, of, you know, EPA, DHEA, those, you know, and fatty acids and you're talking about some of these kind of, you know, precursors to that and all the problems where there would be deficiency in the conversion ultimately leading to EPA.

And then also, eggs, of course, are a fantastic source. Really animal products are going to be, you know, great there. So maybe just talk about some of those, you know, favorite food strategies, as well as release, you know, choline and, you know, really just membrane replacement and uptake and upkeep, if you will.

Why phospholipids become depleted

Animal foods, you're right, are the best source. Eggs are an excellent source, phosphorylated choline. They're also an excellent source of choline and fat soluble vitamins.

They're a nutrient bomb, the only issue. So eggs, bread, meat, dairy, fish, those are really great sources of phosphate, choline. Then we have some of the plant foods.

Soybeans, sunflower seeds are also rich in in phospholipids. The problem arises with just the amount that we need to repair damage. So if you think about an egg yolk jack, an egg yolk has roughly 80 to 100mg of phosphate potato.

Calling her large egg. If you look at the bottle of the body biopsy, half a teaspoon of pure phospholipids in liposomal form provides you with 1300 milligrams of phospholipids.

So we would have to eat about 13 eggs to get the equivalent of half a teaspoon of the body biopsy. So and if you knew the therapeutic doses that we use clinically, you would never be able to consume that many eggs and that much animal food to get adequate amounts of these nutrients to support repairing cells.

So again, I have never personally seen somebody just lean into these phospholipid rich foods to completely restore mitochondrial dysfunction and repair cellular damage.

And there may be an exception to the rule. I just, think that supplementation through exogenous phospholipids today is essential. Well, not me. I certainly agree that, you know, because when people would say, well, why do I need to supplement if I'm doing all of these things correctly from a food or a sleep or sunshine standpoint and to, you know, to what we talked about before and what we've talked about at conferences, I mean, the world is just so toxic and polluted on so many different levels.

And candidly, when people would say to me, well, you know, can't you just deal with what I said? Well, for the first 35 years of my life, like I didn't behave so well.

I got a lot of, you know, catching up to do and, and repair. How do you measure how do you measure success with, with supplementation? What are those objective measurements that we can look at to say that this program is working?

Or maybe someone would say, okay, well, I'm going to try with food first and then we'll see. Okay, well, how do we show that person, that that approach is either working or it's not?

I think just through assessing mitochondrial function and symptoms, symptoms is a great way, you know, that if you have brain fog or you have fatigue or you have muscle pain or muscle weakness, and there's a laundry list of symptoms that we could add to that list that you have mitochondrial dysfunction.

Your mitochondria are not producing enough energy to support maintaining those systems in the body. And if we focus on the cardiovascular system, specifically the heart Jack, the heart requires six kilograms of ATP every single day.

That's an enormous amount of energy that's needed to help support maintaining that system and maintaining that health. And so I think just through symptoms is a really easy way.

When somebody starts to feel less brain fog, more energy, more ability to think clearly and do the work that they want to do over the course of the day without feeling like they need a nap in the middle of the day or they can't, you know, they're in a cloud.

Those are really powerful indicators that you are supporting the repair of the mitochondrial membrane. And through supporting the repair of the membrane, you're improving that flow of electrons through the inner mitochondrial membrane, improving the production of water on complex four, which I just talked about, acts like a battery within the cell and improving ATP production, which we all know as free energy, whether it is that or not, will be yet to be determined.

All right. You know, fantastic stuff there. I mean, again, you know, you talk about the exclusion zone and cellular water. There really is fascinating stuff for people to kind of even pause the recording here and, you know, just listen to this stuff going forward and even just, you know, Google it or I've got some information on my website about some of these topics. So, okay, but you just talked about subjective things.

A lot of people are walking around and they're like, I feel fine. And they have maybe coronary artery calcification, maybe they've already had a myocardial infarction or stroke, and they felt fine before, and maybe they feel fine now.

But objective measurements, because there are so many people like that. Yes. It's it's, it's always nice to see the woman with brain fog. You know, fatigue, you know, whatever complaints they have, and they start to get better.

You know what? The subjectively objective measurements. I'm a big fan of everything over at vibrance. I know you like some of the items and vibrant as well, but vibrant can actually directly measure, choline levels, inositol levels, obviously omega three fatty acid levels and ratios.

And what do you think? Or even just, about markers of oxidative stress or inflammation? Are we seeing changes there? Yeah. Sorry, I misunderstood your question.

I was thinking just from, feeling the patient, how the patient would feel standpoint. There's so many markers that you can take a look at because pharmaceutical lean is, a regulator of lipid metabolism.

So I talked about the role that it plays in regulating the cholesterol feedback loop.

Food sources and why supplementation matters

I talked about, the role that it plays in supporting the personal membranes, which is kind of the gatekeeper of supporting optimal lipid metabolism. But PC is also the main component of all of our lipoproteins, all of our lipoproteins.

It's involved in the assembly and the breakdown of triglycerides. So if you think about VLDL, the main component of that is fast potato cooling. When we think about HDL and HDL specifically has a very high concentration of phosphate, title choline.

And I was always taught that PC actually regulates that reverse cholesterol transport system. So for anybody that needs a refresher, HDL is passively removing cholesterol from the cell membrane.

It is a main component of LDL. So think about Jack small oxidized LDL particles. I immediately go to those particles

don't have enough phosphor title choline to actually protect from oxidation.

And so we can support all of those lipoproteins through facilitated choline supplementation. They're also potent antioxidants. And I think that that's another characteristic that often gets missed from clinicians.

These are powerful, powerful antioxidants and are protecting those lipoproteins, protecting the cell membrane. From from damage I love it. It's all so beneficial, so useful.

And really, so really fundamental. And it's just, I guess it's unfortunate, even for myself, that a lot of this information over the last few years, is kind of coming to light, and really, you know, products like the stuff that Body Bio has in order to really, to work on these things.

We've talked about, you know, or Bob, you know, we talked about food, obviously. We talked about a little bit about supplementation. People will ask about intravenous.

You and I had a discussion before we started recording about Ivus maybe talk about the roles of oral, PC phosphorus, total choline, and then also the role of, intervene s and then combination thereof and some, maybe some indications for those.

Yeah. And just to go back to. So I didn't even finish answering your full question because the lipoproteins you can you can oxidize LDL triglycerides, HDL.

Those are going to be total cholesterol. Those are going to be beautiful markers to test after six months of using exogenous phospholipids. Also methylation homocysteine because it's such a powerful support to to methylation actually the foundational support to methylation.

So those are some easy ones. Creatinine is also a good one to look at. Just through the mechanism of supporting cellular hydration, the the bond creatinine ratio.

So there's lots of markers that you can look at if you want to get specific about seeing improvements after phospholipid supplementation. Now your question about IVC versus oral PK and the combination of them.

So this is as far as I understand, is and as far as I've seen clinically. So there may be people that disagree with this, understanding that I have IVC as an excellent tool to support detoxification, to clear DNA addicts.

So clinically, we were running a test out of Germany called the IGL, and on the IGL it's, epigenetic mitochondrial test. So on the IGL, there was all there was a whole bunch of different panels that you could test for.

And one, two of them, one of them showed cell free DNA. One of them show DNA adduct. So those are toxins that are covalently bonded to your DNA. Either your nuclear DNA or your mitochondrial DNA.

And so I've does an incredible job of removing those intracellular toxins. So PC because of the the characteristics of the molecule, it actually has the ability to work its way inside the cell and wrap itself around these fat soluble toxins and remove them from the cell.

And IVC was used in hospitals long ago for drug overdoses, for alcohol poisoning, because of the role that it plays in helping to support removing all of these toxins from the human body, oral phospholipid supplementation paired with IV is a powerhouse for supporting our cellular health.

Because you're getting those detoxification benefits, you're supporting the removal, the rapid removal of these intracellular toxins through using IVC and by including oral PC.

You're taking in the liposomal form of the body bile phospholipid complex. So you're getting PC in the highest quantities possible. Title ethanol amine phosphate.

Inositol phosphate, title serine. That's getting absorbed in the small intestine, that's going into kilo microns, that are going to enter the lymphatic system and then into the bloodstream to directly go and repair membrane damage.

This is the brilliance of the human body, right? When we give the body what it needs to actually do the work that it was intended to do, really miraculous things happen on the cellular level.

How to measure progress with labs and symptoms

And so that's where, again, you get kind of a double whammy powerhouse when you are giving IVC, especially to a chronically ill person, IVC paired with with high dose oral PC.

And I do really want to emphasize the high dose oral, on the bottle of PC, it says two capsules or half a teaspoon is the recommended dose. And clinically, many of these doctors that are using lipid replacement therapy as a tool in their practice are using tablespoons of of the lipid complex.

Especially in the beginning. Right. As you're trying to get into that, you know, obviously each patient is individual. And maybe some people for maintenance they would use less.

But some of these people who are really sick and they, you know, urgently needed to go to much higher dosing, that's one of the things my, my wife kind of taught me, early on as well, when she opened up my eyes to health and wellness and some of these natural, you know, remedies, if you will, the dosing on the bottle.

And this isn't necessarily the right one. Sometimes you got to go to mega dosing on these things. You know, which is, which is, which is certainly good.

You know, you mentioned before about homocysteine, homocysteine, of course, is a very important biochemical intermediate. And levels that are too high or a problem too low is a problem.

And then how you mentioned that, that the coaling, the PC is very high in these methyl groups that help with the methylation of, of the body and therefore to process homocysteine to regulate that.

I think other markers there are like, you know, mean corpuscular volume mkv. RW some of those things associated with the CBC, are just like another, another tool to show people, hey, this is working.

As those numbers start to improve, meaning platelet volume, you know, would be another one that I think would be great. So that's all fantastic. You know, because a lot of people are walking around like me and they're like, oh, well, I feel fine. And why would I do all this?

Why would I take, you know, because this stuff isn't necessarily free and you guys have the best product in the market and, you know, you people will pay for that, especially a high dose, you know, but, you know, hey, listen, we can only tell people, hey, this is the best way to do it.

And now you got to figure out how are you going to pay for it in that scenario. But, truth be told, obviously it's not crazy expensive compared to some other stuff that doesn't have the data behind it.

Well, two things that I want to at first of all, if you look at Doctor Doug Wallace, his work. So he is the lead researcher in the field mitochondrial research, and he shows that all these people that you're talking about that are walking around symptom free.

He shows that there is, kind of threshold. So an individual with 60% or 65% mitochondrial hetero plasma. And so those are mutations within the mitochondrial DNA.

They will be symptom free. They will think that they're perfectly fine. And then they work their way up to about 70% hetero plasma and they start to manifest symptoms.

So you have some whispers that your body is saying, we don't have enough energy to support, the assist systems in the body. Then you move to 80% hetero plasma and that's when disease manifests.

So I always remind people that we don't want to wait until we have the symptoms, and the disease is not manifesting. We want to make sure that we're supporting ourselves long before, because the PC is so critical and all these phospholipids are so critical.

When we think about the mitochondrial membrane jack phosphor, titled ethanol amine is the main phospholipid that's found on that inner mitochondrial membrane, where oxidative phosphorylation is occurring.

That membrane rich in Foss potato ethanol, I mean, is synthesizing the cardio light. Then that other phospholipid that sits on top, that housing complex one, complex three, and complex four.

And speaking of essential fatty acids, the cardio light been in the cardiomyocytes for of those fatty acid tails on that molecule. It's a little bit different than a regular fossil potato.

Choline are linoleic acid. Linoleic acid is such a key player in supporting the cardio lipid and the overall mitochondrial function within the heart. So we want to use phospholipids as a supportive prevention so that we don't have 7,080% hetero plasma accumulate.

And then obviously we can also use PC as a, as a supportive treatment as well. For cardiovascular disease. But you mentioned methylation. So lean is a key player in methylation pathways.

And it's for a number of reasons. So through the involvement of the hepatic synthesis of adrenal methionine or Sammy the universal methyl donor. So PC is involved in the synthesis of that.

And then it's synthesized through the CDP choline pathway or through re methylation of phosphate ethanol amine. And that's via the phosphate title ethanol amine and methyltransferase pathway.

Oral phospholipids, IV support, and dosing

Or people will know that as the PMT pathway. So that pathway consume. Sam. I mentioned that there's three methyl groups that need to be donated in order to convert ethanol into choline, and that is tightly linked to the metabolism of homocysteine.

So we know that that's a byproduct of these methylation reactions. Right. And when homocysteine gets elevated, that's a direct risk factor for endothelial dysfunction and for cardiovascular disease.

So by supporting methylation, supporting homocysteine recycling through that full way, folate and vitamin B12 dependent pathway, PC is going to help to maintain normal homocysteine levels.

So really reducing the risk of arterial damage and promoting cardiovascular health. Absolutely fantastic. Fantastic deep dive into biochemistry. And there just very impressive, exciting stuff. What?

So tell me, a little bit more about the products and body bio. I'm trying to, I guess, avoid being like, a total shill for the company here, but, you know, you are here and sponsored by the company and work with the company and its best in market.

So maybe tell us about some of the products and some of the offerings that you guys have over there. And really, and what's the next step for people to take as they're listening to this?

Yeah. So you mentioned before that the body bio phospholipid complex is the best product on the market. And I will say that it was because of their product that I got into this whole field of studying phospholipids and fatty acids.

So yes, it is absolutely the best product on the market. And that's for a number of reasons. So the body bio

phospholipid complex is in life is normal form.

So I explained how that gets absorbed in the body. It's not going through the process of digestion like most fast. The title choline supplements are so most and I would say pretty much all of the Fos.

The title choline supplements on the market are either triple lecithin or lecithin, and that is going to get broken down through the process of digestion into choline and fatty acid.

So then you have to take those essential nutrients, put them back together to synthesize phospholipids through those pathways that I talked about. That's not the case with the body bile phospholipid complex.

Second of all, the concentrations of phospholipids are almost identical to your cell membranes. So the phosphate head or choline to ethanol, amine to inositol to serine, there's a little bit of phosphoric acid in there as well.

And that's involved in the synthesis of all the phospholipids. So we're delivering these nutrients to the cell in identical concentrations to your cell membranes, which is what we want.

And I could give you lots and lots of examples as to why we don't want to be giving high doses of one phospholipid to individuals, which we see a lot through phosphate.

Syrian product or supplementation, right, to support lowering cholesterol or lowering cortisol. And when we have excess levels of phosphate, serine, what happens is the cell membrane is going to flip.

It's going to induce cell death because phosphate title serine is a signal for apoptosis. So we don't want to be delivering really high amounts of one phospholipid to the body.

We want to be giving the body phospholipids in concentrations that are mimicking our cells. And the purity of the product is body. Bio does the most outstanding job of making sure that they are getting the very best product to their customers, and it's one of the many reasons why I love this company.

They have so much integrity and you don't see that a lot out there. So I feel very proud to represent them. And I will say I would not be representing them if they weren't such an outstanding company and delivering such a phenomenal product that is so foundational to supporting human health.

Fantastic. Then we have a couple of other products as well the body bio products. There's many now in the lineup, but if we're focusing on the cardiovascular system and really membrane replacement therapy, like you mentioned, we want to focus on delivering phospholipids and essential fatty acids.

And so there's two options for essential fatty acids. Body bile has a balance oil which is a combination of those two essential fatty acids that I spoke about linoleic acid and alpha linolenic acid.

So those are our two parent oils. Those are the two parent oils that are going to get converted to downstream metabolites. And they're very, very important signaling molecules.

And I will say poor linoleic acid gets so much demonization because of what we've done to linoleic acid. And it is the most abundant fatty acid that's found within our cell membranes.

And I mentioned that it is absolutely critical for healthy heart functioning because of the role that it plays in the cardio life. And so we don't want to be deficient in essential fatty acid.

Of course, we don't want to be overconsuming linoleic acid. And especially we do not want to be consuming it from any source of industrial seed oil. And we also want to make sure that it is in an optimal ratio.

So the optimal ratio for cellular health is about a 4 to 1 ratio from linoleic acid to to the omega three side alpha linolenic acid. And that's exactly what body bile provides.

Body Bio products and key lipid support options

The balance oil provides. There's no hexane, no solvents, no bleaches, no deodorizer. It's a cold pressed oil. Every batch is tested for oxidation, and every batch is tested for plasticizers.

So you as a consumer or as a practitioner, need to make sure that you are educating your patients on proper use. They never want to heat it. You want to keep it in the freezer or in the fridge.

It needs to be used only in a cold application. And Jack, I know we talked about this before we started recording, but you do want to make sure that you don't prolong the life of the balanced oil.

I recommend using it within 30 to 60 days max, and that's really easy to do if you're using about a tablespoon a day to really support as an insurance policy, just to make sure that you're supporting those essential nutrients.

Not overdoing it, but supporting both sides for optimal cellular health. And then the evening primrose oil is also an excellent tool to support essential fatty acids.

It is a combination of linoleic acid and gamma linolenic acid. So that is the first downstream metabolite on the omega six side. And that for cardiovascular disease is so significant because GLA or GLA goes into G GLA, which is dei hormone, gamma linolenic acid, which goes directly into PD one, to it.

So you see in the literature, very low levels of di linolenic acid are implicated in cardiovascular disease. It plays a significant role in helping to modulate the immune system.

So many people think omega six is inflammatory. That's not true. Omega six is not inflammatory. It can create pro-inflammatory cytokines, prostaglandins, in in certain situations.

And we need that. We need to make sure that we are able to mount a healthy immune response. But it's also very anti-inflammatory. So I love the evening primrose oil, to support GLA and to support the conversion to homo linolenic acid.

Excellent, excellent. What about that? Now you guys also have a butyrate product. What about butyrate supplementation. Yeah. Butyrate. Oh and we also have a fish oil.

So I am right there with you. Whole food always first. I'm a huge fan of individuals eating seafood for all the myriad benefits that seafood provides.

And I do believe that body bile has the best fish oil product on the market, because it's not actually a fish oil. It's derived from herring row. So the EPA and DHA are in phospholipid form, which is the way that we want them to protect them for conservation, and also to get integrated into the, the central and the peripheral nervous system as well.

And butyrate is another fabulous tool, Jak. It's a short chain fatty acids. So it's a four carbon chain fatty acid. Most people know a butyrate through being made through the fermentation of dietary fiber.

We also make it through many other pathways as well. But we can focus on it getting made through the fermentation of dietary fiber. It's the number one fuel for a lot of sites.

It has antifungal activity. It has anti-inflammatory activity. It supports liver health. It acts as a chaperon molecule. So that's a protein or a molecule that can actually go in and break down misfolded proteins, misfolded lipids.

It has those characteristics as well tons of neurological benefits when it comes to butyrate. Can calm down primed or activated microglial cells. So really good for people that have neuroinflammation.

It supports the blood brain barrier. The benefits of butyrate are it's a long list. Excellent. Excellent. Well, thank you

so much for on your vacation for, for this conversation.

And, you know, you, you know, with the sun and nature in the background, whenever people talk about the sun shine and how sun causes cancer and damage and it's, you know, you look at it like, well, obviously that doesn't make sense.

The sun is, you know, God is the source of all life. And and the sun is, is right there along to support all of the, the, you know, the, the mechanisms behind that and how all these things work together.

So I think when people eat the right diet and they're taking the right supplements now, it allows you to, collect that energy from the sun. Our solar panel is nice and strong when everything is working all in together.

And that's just so, so synergistic. So, Justine, thank you so much for this conversation. Brilliant. Brilliant stuff. Appreciate you and the support of Body Bio.

You know, for this summit and, doctor Jack Wolfson with another fantastic episode of the heart attack and Stroke Prevention Summit. We'll see you next time.