A Multi System Treatment Approach to Traumatic Brain Injury, PTSD & Neurodegenerative Disease Using Peptides Transcript

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Thank you, Integrative Peptides. Now let's jump into today's conversation.

Opening Remarks on TBI and Chronic Illness

Now, cortisol is very, it's relative. If you're not stressed and thin and fine, 12 is fine. if you were in the ICU and you had 12, you are probably going to die.

So it is all relative here. You know, stress is in regards to immunosuppressant, but it isn't. It is an immune modulator. it lowers that cellular immunity, increases that hormonal immunity.

And so it drives that shift. Welcome to the Peptides and Longevity podcast. Each week, we'll dive into groundbreaking science, innovative therapies, and the future of health and longevity.

Alongside visionary physicians and experts, We'll explore how peptides, cutting edge medicine and lifestyle strategies can redefine the way we age. Get ready to transform your health, optimize your vitality, And unlock the secrets to a longer, healthier life.

Let's get started. Hello, this is Ken Holtorff and just delighted to speak again for Boston Biolife and the collaboration they have. And, you know, so many vets are just left with so much chronic illnesses, traumatic brain injury, post-traumatic stress, and it's very, very treatable.

So I thank Joe for the invite and I think it just a great lineup and a lot of great lectures. I'm going to be speaking about peptide therapy for traumatic brain injury and what you find goes a lot along with post-traumatic stress and becomes a vicious cycle as well as, you know, mast cell activation.

You'll find that people think kind of a brain-injury, very different than chronic illness, but they have the same pathways and it's about inflammation.

Basically, judge and guess who is going war and if they get any significant traumatic brain injury, who's going to be much worse off, post-traumatic stress and get all these different problems have much worst outcomes by the immune system.

I want to kind of lump these all together. They seem very disconnected, but they're actually very connected. Ken Oltorf, medical director of the medical group, also the National Academy of Hypothyroidism, we're a non-profit.

Recommend you check that out. Diagnosing and Treating Thyroid in this country is strong. Founder of Integrative Peptides, but the opinions expressed are mine, they're not.

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talk about to understand how the physiologic stress causes really immune dysfunction.

Immune Dysfunction, Inflammation, and Vicious Cycles

And I talked about this so much because it is the common denominator of all these chronic illnesses, acute and chronic illness, those acute illnesses that become chronic, such as traumatic brain injury, post-traumatic stress, but even, you know, mass cell activation and all of these go into traumatic And everything's a vicious cycle in medicine.

You'll find if you get at that underlying cause, these complex illnesses, because these people just don't have traumatic brain injury. As soon as they get a brain-injury, their blood-brain barrier basically opens up, which then causes their gut to open up.

Now they got all these big proteins coming in, inflammatory, the mast cells move into the brain, and it's vicious. And but you see that same thing with even a chronic Lyme and things that don't seem really connected and we find the people that are doing very poorly with traumatic brain injury look for a Chronic infection look For mold toxicity you'll find it's amazing the overlap To understand how traumatic brain injury induced immune dysfunction leads again to a vicious cycle and multi-system dysfunction.

This is not a brain problem. It is a problem, but it's also a lot of other things. They get mitochondrial dysfunctions. The cells in the brain, basically the mitochondria stop producing energy and they start producing all these reactive oxygen species.

And then that just makes everything worse. and you get neurodegeneration. They're at higher risk for Alzheimer's, neuro-degenerative disease, even autoimmunity.

Their immune system is all screwed up. You get hypothalamic, pineal, hypothalamic, tuatary, hormonal dysfunction, so they're all low hormones, with traumatic brain injury, the tuotary.

The hypothomers are very sensitive. they are kind of in the middle and they get stretched back and forth and may by themselves have a lot more trauma, even though they're right in the middle, but also because of all this inflammation.

And you lower the inflammation, you're going to get these patients better. You'll notice is that they have lot of things in common with chronic fatigue syndrome.

They can't sleep, they are pain syndromes or anxiety, insomnia. The insulin resistance, like what the heck is out? You get brain damage and you get insulin resistant.

Insulin resistance, they get microglial, which are the mast cells in the brain activation. Again, autoimmunity, you get immune activation of coagulation.

And then we'll talk about the major class of peptides and what's used for different disorders. Understand the importance of that pineal, thymus gland, hypothalamus, and thynus glands, how they all actually have a two-way bi-directional interaction.

And really how those can be a key to success for brain function and also you know the gut brain access and the brain got access that's another bidirectional and then got influences so much and learning so what more about that don't have a chronic lime is like what the heck are chronic lyme disease with dramatic brain injury but.

They kind of fit together, maybe help you understand a little more. So most patients with chronic Lyme, they're generally asymptomatic for a period of time.

And they find that people that are going to be more prone to worse traumatic brain are more stressed. They have immune dysfunction, lower hormones, adrenal dysfunction and a lot of inflammation.

Then they go to their doctor and they always trying to get a test done, a doctor says, oh no, you're negative. And they get diagnosed with numerous things, such as chronic fatigue syndrome, fibromyalgia, POTS, anxiety, neuropathy, autoimmunity, and you'll find this with traumatic brain injury.

Exactly the same thing. They're also much more prone to neurodegenerative diseases, so they do parallel each other. In a triggering event, especially in the backdrop of chronic Lyme, or really stress, is makes it much better.

So in this case, a traumatic event is a brain injury. And this immune dysfunction, again, with the backdrop of stress, really sets everything in a vicious cycle.

They get a measurable hyperflying pituitary immune, gastrointestinal mitochondrial, depopulation, they can't sleep, and then everything just gets worse and worse.

And this I did in 2003, and it still holds very true. Whether there's trigger event, traumatic brain injury, again, you get hypothalamic-tuatory dysfunction, so you have hormone deficiencies, then the mitochondrial dysfunction is a big, big problem.

And because not only do they stop working, but instead of making energy, they start producing reactive oxygen species. They go into the brain cells, or go in what's called senescence.

So they're there, but they are not doing anything. In fact, they were harming all the other cells and causing them to go into apoptosis and recruit them into senescent cells.

And so all these things play a part like mold toxins, environmental toxins in a coagulation defect, all those things. So, you know, with Lyme, the small amount of organisms, huge amounts of mean mod-choice cytokines, same thing with traumatic brain injury.

Mast Cells, Cortisol, and Blood-Brain Barrier Breakdown

You don't have to have some big IED blowing up. It can be multiple small traumas that add up over time, especially if you have other illnesses that cause, brain inflammation, whether it be a chronic infection, stress, immunity, or older.

heart disease, diabetes. And so think of TH1 gets stuff inside your cell and TH2 gets up outside your cells. TH 1 tends to go with Tregs, which will kind of modulate and develop tolerance.

Then TH 2 and Th 17. Th17 is kind the inflammatory, the autoimmune set of T cells, so they get that shift to that right, that TH one T reg to TH two TH 17, We see it over and over, and all these illnesses.

So what conditions are associated with this? An IL-6 is a big inflammatory marker, again, chronic infections, COVID, PTSD, traumatic brain injury, cardiopulmonary syndrome, inflammation, dysbiosis.

All these things, if they seem totally disconnected, actually go together, EMAPs, they're going to be a very big problem for people with traumatic injury.

And the longer you have this, whether it's traumatic brain injury, chronic pain syndrome or Lyme or Parkinson's or whatever it may be, the immune system just gets worse.

The mitochondria gets worst. They're all progressive diseases, but you can reverse that. And the longer the

duration, the worse it is. Here's just showing that chronic fatigue syndrome, you know, they have a TH1 to TH2 shift, just like traumatic brain injury.

A big part is they get the mitochondria dysfunction, as I mentioned. In this study, we found only one in 71 patients overlapped the normal region of mitochondrial dysfunction who had chronic disease syndrome.

So, and the same thing holds true for traumatic injury, Twitter, it's significant stress, traumatic brain injury, post-traumatic stress aging. You get that shift and then you get also mast cell activation.

And that, if you can see here, I tried to highlight some of the keys here but CRH, Produced under stress and it is a big math cell activator. So it basically will drive Everything to th2 and here you end up down at the bottom there high eosinophils math cells You know the th to shift in low cellular immunity So you can't fight these intercellular infections, but your body is all this inflammation is trying to fight.

And that's what we see with traumatic brain injury. So all of a sudden these TBI patients, now they have chronic Epstein-Barr, they had Lyme that was in remission, it comes back out.

like Lyme disease and traumatic brain injury because they had it all along, but the body just suppresses it. Most people that get Lyne, and especially most people to get these opportunistic infections, everyone has them.

Everyone's been exposed to the Epstein-Barr. If you ever kissed anyone, HHV6, HSV1. But as soon as that TH1 comes down, that natural killer cell, it comes back out and it makes traumatic injury worse.

They can't heal. Like what's wrong? It basically stimulates the math cells, which is a common denominator, and all these things. Most of the, you know, the mass cell groups and that the mainstay is antihistamines and direct math cell inhibition, Which is fine.

But you find if you go upstream, now we're talking about that with immune modular peptides, You're going to get much better results with these patients.

In math-cell activation, I mean, no one heard of it 20 years ago. Now, It can't go to a party without someone saying either they know they have mast cell or you go, God, you probably got mast cells.

And you'll see a lot of times these patients have high ACTH but low cortisol. For instance, a study in Brazilian Journal of Infectious Disease showed that they did stimulation tests, but they found that a morning cortisol of 12 or less has an 87% chance of being low adrenal.

That's important with traumatic brain injury as well. Now cortisol is very, it's relative. If you're not stressed and thin and fine, 12 is fine. if you are in the ICU and you have 12, you probably going to die.

So it is all relative here. You know, stress is in regards to immunosuppressant, but it isn't. It is an immune modulator. it lowers that cellular immunity but increases that hormonal immunity and so it drives that shift.

brain injury stress, post-somatic stress. You get the HP axis activation and the mast cells basically activate the microglia and astrocytes and you can see all these cytokines there.

It again becomes a vicious cycle. They get depression, they get anxiety, and they can't sleep.

PTSD, Hormone Dysfunction, and Neurobiology

and they get immediately blood-brain barrier permeability, and now all these toxins and proteins and mast cells can now get into the brain, but also the gut.

It's almost instantaneously. When the brains opens up, the guts open up. And they found with all these neurologic diseases that the blood-brain barrier is very permeable.

You also, you know, with the high CRH and stress, that directly stimulates permeability of the brain barrier. And then you get release of IL-6, IL8, JEPH.

So that, again, just starts everything off in a vicious cycle. Now, what they found, like with MS, is they've found the cells in the periphery weren't too affected, but they showed that the mast cells and the leukocytes were stimulated at MS in brain but not in peripheries.

So it can really throw you astray when you're checking blood. But, you know, it's kind of hard to do. You could do CFS, that's not that accurate, brain biopsy to everyone unless you are Dr.

House, right? So you get the dura-mass cell activation, mass cell proteases. And CRH is a big problem. So disease with somewhat high ACTH associated with low cortisol, you'll get them low-cortisol, lower that ACth, which will then lower the CRh.

You'll find a reduction in inflammation as this one treatment. PTSD, I started looking into this, it is so associated traumatic brain injury, but also with chronic illness.

And people who are chronically ill, they get post-traumatic stress. I know, I went through it as bed bound for three years, three and a half years of IV antibiotics, it didn't work.

And I'm like, what am I going to do? I want to off myself. Yeah, you know I was just depressed and it becomes a vicious cycle. So basically, you know, with this COVID thing, I swear people are just stressed to their max.

Everyone's just nasty. There's so many more cardiovascular deaths, but now they're counting as COVID, so you don't know. We're in for a whole society of chronic fatigue syndrome and the so-called mystery illnesses.

Well, they are mysteries if you do not look for the correct things. Yeah, so you get in terms of post-traumatic stress, definition, you're always reminded of the event, intrusive thoughts, nightmares, your hyper aroused agitation, impulsive, quick to anger, but also kind of deactivated and numb, withdrawal, basically dissociate, have depression.

And it can come and go. And there are significant neuromeologic and neurobiologic features of post-traumatic stress. They are genetic, developmental, like even, you know, the stress of the mother plays a big part in the likelihood of a child having these things.

So it's like, damn, don't even get a chance. Like your mom's stressed that you're going to end up being more likely to have severe outcomes or succumb to some of these diseases of aging, multi-system illnesses that doctors don't want to believe because they can't treat.

And especially they have a lot of frontal lobe damage with traumatic brain injury. So they get like kind of that disinhibition a lots, so that impulse control.

They also have amygdala degeneration. That's where that fear comes from and they could really act out. They get hypothalamic pituitary hormone axis dysfunction, so they get low cortisol, growth hormone, thyroid, gonadotropic hormones.

But they all look normal on the blood test because the ranges are so wide. And for instance, with thyroid we look at the TSH. The T SH is low, not because thyroid level is lower, because pitutary, hypothalanic pituatory is not working.

Same with the other hormones same with growth hormone and if you look at the growth hermone reference ranges now it's ridiculous you down to twelve and they say it normal is everyone so low now you get you know we have kids come in now there twenty two testosterone levels are like two hundred and forty and i got into chronology say all their normal.

Give me a break. If it was 10 years ago, they'd be well outside the reference range. About 40 years, ago they would

be like, gosh, there would have been none.

But they just keep lowering it. It's like saying, well, you got cancer. Well, everyone's got cancers, so that's normal. And again, that immune dysfunction, a lot of autoimmunity, gut brain access issues.

Increased catecholamine glutamate production. So glutamine is that excitatory neurotoxin, a low serotonin GABA, so those basically calming neurotransmitters.

They get hormonal resistance syndrome. Even though their levels are normal, they don't have the effect. We'll get someone come in, their testosterone levels 600, 700, 800. And they have erectile dysfunction, they are fatigued, depressed, grumpy old man syndrome.

We'll give them a shot of testosterone.

Peptides Overview and Immune Modulation

And you know, as a therapeutic trial, all of a sudden, you gotta feel a lot better. That's good medicine. They also have low cortisol, immune and mitochondrial dysfunction.

So they can't make any energy, instead they make all these reactive oxygen species, GI abnormalities, mood. lots of inflammation, autoimmunity. They're all low thyroid, low growth hormone, they have sleep dysfunction.

I hear stress is a trigger of autoimmune disease. Studies show that 30 to 40% of patients with moderately to severe COVID-19 suffer from PTSD. But yeah, we're rarely diagnosed.

A consistent abnormality is hippocampal dysfunction and atrophy, amnesia, hyperactive amygdala, again, that fear response, hypovigilance. They get atrophy and dysfunction of the prefrontal cortex, so poor impulse control, they get trouble with the police at work, and they'll modulate their emotional response caused by the amygdala.

So really, you need to watch out for this and be able to treat it and also to boot increased risk, dramatic increased cardiovascular mortality, morbidity, compared to people who, you know, they all have sleep disruption.

They don't hear the medication, and they got autonomic dysfunction, substance abuse, all those things, which goes along with this brain damage. So one study found that approximately half the cancer survivors think about their cancer daily and working, thinking about multiple times a day, And which really messed them up, in a much worse prognosis.

We will get right back to the episode, but first a quick thank you to our sponsor, Integrative Peptides. If you are enjoying today's conversation and want to support your health and longevity, visit integrativepeptides dot com and use the code PODLIFE for an exclusive listener discount.

That's integratvepep-tides-dot-com. Code P. O. D. L. I. F. E. Now back the the So even PTSD and natural killer cells. So natural cure cell function is a good marker through Quest.

Natural cure function, you get natural cell number through LabCorp. Not quite as good, more insisted, the natural care cell functioning screwed up a lot, but These are all the same, whether it's traumatic brain injury, chronic fatigue syndrome, also, you know, look for, just like in COVID, immune activation of coagulation, and you'll see also insulin resistance in these patients.

And it is hard to know where the immune system is by looking at the cytokines because When the immune system is shifted, the body will try to shift it back.

So you may get a high TH2 or TH1 that's trying to raise the TH one. And they'll say, oh, it's a TH 1 condition, but the reason the bodies increasing the th1 because th2 secretes th one side effect.

The thymus plays a huge part. Yes, a post-traumatic stress, COVID-19, immunosuppression, again, vicious cycle, like th 1 to th 2 shift, everything's efficient cycle.

Here are some studies showing that with MERS and that. So brain fog following COVID-19 may indicate PTSD study finds. PTSD COVID 19 in Lyme. And then here's a study that did a review of HP axis dysfunction in chronic disease syndrome and fibromyalgia and found they were basically the same between the two so-called illnesses and syndromes, but the fibomyalgic patients had more dysfunction in the hypothalamus and the carnivorous syndrome of the pituitary, which makes sense that the pain centers in hypothalymus.

So treatment with low physiologic doses as with traumatic brain injury can be very helpful. And they found that a morning cortisol, you don't need to do stimulation tests, level below 14, carried a greater 90% sensitivity and specifically 73%.

So they thought 12 was the optimal with 90% specificity and 70% sensitivity. And ACTH under stress is less bioactive, as is the TSH. So that's why you'll see a lot of high AC TH and low cortisol.

But your body's pumping out the CRA to try to raise the cortisol levels. So we'll get to the peptides. What the heck is a peptide? The naturally occurring amino acid, or sometimes an analog of a short chain.

Just by definition, arbitrarily, if it's less than 4 to 50 amino-acid length, it is considered a peptide. If longer, its considered protein. Peptides generally work more like supplements.

They have theotropic multiple effects. they generally affect the cell surface and cause a cell signaling. response where hormones go into the nucleus and change protein synthesis so they're slow on slow off.

Peptides generally much less risky although hormones are safe as well. Yeah so, they really kind of fine-tune. It used to be 10-20 years ago was hormones, learned hormones.

They're the master controller. Now we're finding peptides are that fine-tuning element.

Thymic and Pineal Peptides for Aging and Recovery

And the nice thing is it's shown to be extremely safe, even given a 10 to a thousand fold typical dose. Try that with Tylenol, you're dead, try it with water, your dead.

So just going through, give you, if you haven't heard about peptides, immune modulating peptide, which we've become an immune-modulating center. Especially when I had Lyme, Babesia Bartonella, and did the kind of the standard, the highest dose IV antibiotics that I would never give a patient, it just was not better.

They said, there's got to be a better way. Went into heart failure. The cardiologist said maybe in 10 years, you get 10% better. I'm like, I am not going to live like this.

Like, am I going blow my head off or am going go? I looked for treatment, kind of went around the world and did a lot of wacky things, but a good things too.

One thing I found and wasn't expecting, I took peptides and then about three days later I just walked up the stairs. I couldn't stand up straight. So thymus and beta-4, and there's also thymosin beta 4 active frag, BPC and KPV, so we'll talk about those.

Bimus and alfalfa wands approved in about 33 countries was approved as an orphan drug here, but too many people were using it safe and effectively for COVID, so they basically banned it.

Bimylin and bimogen are other thymic peptides. They're little different properties, also a lot of the same. Epitalin and pinellin are pineal hormones, which are kind of master controllers, and they control the hypothalamus.

and thymus glands. Sleep peptides, delta sleep-inducing peptide, it's not a sedative, takes a couple of weeks. It really lowers the inflammation in the sleep center.

Peptitalin and pinellium. We found a nice combo is take Pepitalina or pinealin, Delta sleep-inducing peptide and a growth hormone, secreted-ob, growth-hormone, or AOD, which is a Growth-1 fragment.

Frame peptides, it's increased memory, depression, anxiety, got CMAC, C-Lynx, dihexa. Cerebral isim, you get IV, but again, I was too safe and effective, so the amputee decided to not Allowance, they're all very synergistic.

Again, TB4, T4FRAG, BPC, Delta sleep, if you eat, all work for brain. Growth hormones, pedagogues, not going to talk too much about because that would be a whole lecture.

Antimicrobial peptides. pain peptides there, you can see. Phytochondria are really key for traumatic brain injury, and MOTC, we'll talk about those. 5-amino-1MQ, which we found works really well for OCD, amazingly.

The human end, there's a lot of trials going on. It does so many things in that it will reverse diabetes. it can even treat Yonker-Cruisevel disease. SS31 is kind of an intercellular antioxidant.

Inter mitochondrial antioxidant, I should say. And also BPC-157 and TB4-DB4F also work on the mitochondria. Melanotropic peptides are becoming our favorite, and there's kind of a super-KPV, which should be out soon, that is wonderfully anti-inflammatory and suppresses bath cells.

what to work great for a traumatic brain injury as does bpc and tb4frag in the mean modulation when you look back like where do all our problems start really it's with the thymus it starts to involute at about age 15 and is at its lowest right around 40 to 45 but that's when these diseases of aging start right where you get Immunosenescence naturally occur with aging, so you get increased sub-cellular infections, inadequate immune response to vaccinations, but higher risk of side effects, increased propensity for autoimmune disease, increase cancer risk because that natural killer cell actually monitors your body for intracellular infection, also for cancer, increases cardiovascular disease and all the inflammation, degenerative diseases.

So here's the thymus activity here, and then you look and these are disease of aging, you know, bump with childhood diseases, but you can see they start as that thymus starts getting less thimus activity.

And majority of people also have pineal gland calcification by 30, which is shown at work. Now, even the CDC states approximately 80% of age individuals are afflicted with at least one chronic disease result of thiamine-related immune function.

Wow, why aren't we doing something about it? And here the article is saying, Why aren´t we looking at the thymus, giving back thimic peptides? So, again, the Thymis brings back that immune system to proper shift, lowers inflammation, maintains normal antimicrobial activity, boosts mitochondrial function.

It heals wounds, anti-inflammatory, increases nitric oxides. It actually prevents senescence and allows the body to actually get rid of the old cells called autophagy.

Increases antioxidant glutathione production, stimulate stem cell activity, maintains your gut and your cut plane barrier, reduce microbial activation, whether from toxins, EMFs, infections, alcohol, traumatic brain injury, great for biofilms.

Now what is TB4 FRAG? So TB 4 is a 43 amino acid long thymic peptide. It's also produced elsewhere in the body, but has multiple domains that code for overlapping things.

TB4, BPC-157, and Gut-Brain Repair

So the TB-4 active Frag is the 4-amino acid, basically C-turbinal. The beginning of it is workhorse and has the immune modulatory and the healing properties.

without the other domains. There's a domain in full-length TB4 that stimulates mast cells, which you don't want. And it's also by weight, it say about 10 times the potency, more anti-fibrotic.

Again, doesn't stimulate mast cell. It's, and it also orally adorable where TB 4 has to be injected because it is too big of a molecule, crosses one brain barrier and gets into biofilm.

So they're actually, all these peptides I'm talking about are very antimicrobial. actually broad spectrum. Now, basically, humans are ensuring growth factor beta.

It's a potent mast cell stimulator, it stimulates fibrosis, and these peptides will actually suppress that. So that's just, there's the TB4 active frag.

And here it shows that thymus and beta 4 prevents microglial activation with alcohol. When you look at some cancers, you'll see, they'll say, well, here's high TB four round cancers.

But what they found is looking at knockout mice and things that it's kind of like in a fire. I see a lot of firemen go, oh, the fireman must be starting the fired.

No, they're the response. So your study on TB4 and MS, so brain conditions and basically showed improved functional recovery. The inflammatory infiltrates were significantly reduced.

You can see lot a studies on that showing that TB 4 FRAG and TB four on MS. Here is TB4FRAG on hippocampal neurogenesis. They once said they had rats in a box and they just put a cell phone for three weeks in the middle and then they sacrificed them and found they all had hippo-campal degeneration.

So it's a little scary. The TB 4Frag may be therapeutic for any neurodegenerative diseases. and it showed that you get basically increased adult neurogenesis, which are relevant in preventing various neurodegenerative diseases by replenishment of damaged neurons.

TB4 neurologic regeneration is showing some studies here, peripheral neuropathy, central brain injury, traumatic brain injuries. This is helping endothelial damage, basically inflammation, which is the cause of heart disease and a lot of other things as well.

It can also affect the brain, strokes, Here, it showed that 1,000 times the usual dose, no toxicity. It increases stem cells, so stem cell activity we'll give it with TB4, BPC, AOD, and a mitochondrial peptide with our stem-cells.

So BPC-157, it's kind of the go-to peptide for most doctors. It's highly stable in the gut, shown to be stable 24 hours in gastric juice. Reduces inflammation, healing in most everything.

Its almost be traveling. Salesman say, oh, what helps for everything? So it kind about their studies showing that. works all the autoimmune diseases, kind of doctors go to peptide, suppresses mast cell activation better than antihistamines.

It prevents damage from numerous toxins, whether it be environmental, mycotoxins, neurotoxin, and it's a homeostatic peptides in that If your blood pressure is too high, lowers it.

If it's too low, like in POTS, it raises it, if you're hypercoagulable, or lowers, and if can't coagulate, raises. It kind of evens everything out. Again, broad-spectrum antiviral outperforms acyclovir on just one 1000th dose, effective in prevention of PBI and neurodegenerative diseases.

See if it improves a wide range of cardiovascular. abnormalities, improves heart failure, and post-MI. Also, peripheral and central nervous system pathologies, again, TBI, MS, Alzheimer's, Parkinson's neuropathy.

Severed spinal column, they severed the rat's spinal call and they only did nasty things as rats, but they gave them BPC, it grew back together. If they didn't, didn' mood disorder showed up to form antidepressants, It prevents

various inflammatory and autoimmune diseases, modulates pain into microbial nerve degeneration here after traumatic injury, and it protects the body against toxins.

We're just assaulted by so many toxins, then it reverses that mitochondrial damage, which again starts off that vicious cycle. Repairs the gut-brain axis.

The nice thing is, I would say someone has SIBO, you take SIBo. but you haven't fixed the brain-gut axis so the sebum just comes back. The nice thing with BPC, TB4-FRAG, and KPV, that combination will fix the gut and leaky gut much quicker than anything I know.

Effective Bpc on hippocampal iscemia. Extremely safe also in this study to saying, you know, safer than water, caffeine, 118 coffees, and 13 shots of alcohol.

Just remember that the gut is, the brain access goes both ways. So you want something that affects the, gut brain axis and the brains gut axis. The VPC lowers that inflammation.

the TB4 frag works specifically on the tight junctions and that KPV is a great anti-inflammatory and also kills a lot of And they all kill a lot of bad bugs, but not your good flora.

Actually, they help your flura flourish. So they're kind of ideal for blood brain barrier. But here they found, you know, all BPC is shown to be equal potent to injectable Bpc at the same dose.

Although people think of it as a gut peptide, because it does work great in the gut, systemically.

Neurotropic and Mitochondrial Peptides

Again, this showed the brain. They had rats, so they induced the pulmonary bowel disease and multiple sclerosis, lucky rats. And they found that oral BPC worked in both.

Oral Bpc for MS. So epicalen, the pineal peptide, it stimulates serotonin and melatonin, will bring melotonins levels back up to youthful levels, restores telomere length. They had menopausal rats that they gave it to, 80% started menstruating, 30% or so had normal live births, increases T4 to T3 conversion, improves glucose tolerance, reverses age thymus and poorly functioning natural killer cells, basically suppresses mast cells increases lifespan, you can see thimus in pineal gland, Increase in lifespan there for both of them inhibits aging.

Basically, they did a very short six courses over three years where they had 40 control, 39 coronary patients. Patients treated with epithelium and parallel basic treatment demonstrated less AED on the cardiovascular system and prevented age-associated impairment and physical endurance.

Normalized circadian rhythm, melatonin production, and carbohydrate with the metabolism to prevent diabetes. And it significantly lower diabetes rates.

It increases telomeres, so lengthens telomerase. I have 33% in that study you know so she with age and cellular age cells can buy much longer with it.

So here they gave fine you like which family peptide and a pineal peptides at the town you can use by Neilian over. 68-year period, 266 elderly patients treated for just the first two to three years.

It showed that the ability of the bioregulators to normalize the basic function of an organism might improve indices of cardiovascular, endocrine, immune, nervous system, homeostasis of metabolism, the 2 to 2.4-fold decrease in acute respiratory disease, reduced incidence of ischemic heart disease and hypertension, osteoarthritis, osteoporosis.

They had a decreased mortality rate of 2 to 2.1 fold in the thymalin group, 1.6 to 1,8, and the epithelin group and a 2,5 fold treated in a combination group.

A separate group that got treatment for six years had immortality rate that was four times less and controlled. really shows the highlights of about the best anti-aging combination you can do.

Let's look at neurotropic peptides, so brain peptide, mixture of neuropeptides. I don't have a lot to go here. Neuroprotective, they're actually porcine.

Mixture of neuropeptide. Proves cognitive function. Used for traumatic brain injury, Alzheimer's stroke. Approved in numerous countries. Should be very effective for autism.

Very, very safe. Been around forever. Too many people are using it for COVID. works for Alzheimer's disease. And the nice thing is they banned the injectable, but oral works just as well.

It works. Just a single dose showed significant electrical bioactivity in one hour lasted six hours. They've been improving their memory performance after just a simple dose.

So they had positive effects in cognitive performance, improves memory and attention, inducing acceleration of brain, bioactive activity. rude memory impairment and brain damage individuals and with or without neurodegenerative diseases.

There's also C-max and C length. They're nootropic, similar in action to that of nerve growth factors, peripheral nervous system stimulation and rejuvenation.

they also shield neurons from neurotoxins, inflammation, a lot of crossover with these peptides and that's a nice thing. Very safe. You can't screw up.

If you do one first, the other, I'll share it on this one. That's okay. So you can start these things on Monday. And again, they're available as supplements, also as injectable in a compound pharmacy.

Improved memory and attention, dopaminergic and serotonin, improved recovery from stroke, chronic brain injury, Alzheimer's, Parkinson's stroke. Toxin-induced encephalopathy.

Again, no side effects. I do want to mention melanocortins.

Labs, Treatment Strategy, and Closing Thoughts

KPV is, we're very excited about it, especially super-KPV, which found a way that it's so much more potent, no side effects, suppressing mast cells, also very antimicrobial, and also think of mitochondrial peptides.

They're going to increase metabolism, increase muscle strength, memory, depression, they're neuroprotective, increased mitochondria NAD, increases for 2 in 1, You know, the combinations are key, and they're just kind of a summary.

You can see all the things that they do. This was our study that we published. We had 500 patients, then we did 5,000 patients with 40 physicians. It was 15 years ago on multi-system.

And then I'll just leave this for you. What labs do you look at for immune dysfunction? And your human sensorine growth factor beta is a major problem.

look for those and then here's leave that to you kind of the peptide starting dose for traumatic brain injury, chronic Lyme disease, kink along with this.

Again, start with your basics, the BPC, TB4 frag, then add in as needed a pitalin or a you know, it's traumatic brain injury. Look at the mitochondrial peptides, the cerebral lysine, just cerebral pep, all C length, C max are key.

So it is for traumatic injury, so really they have common denominator with all these other chronic Illnesses, certainly

I would go to the brain, no tropics quicker, the mitochondrial peptides quicker.

But that immune modulation is the key. There's just the testimonial that you can read from a traumatic brain injury patient. This doctor just sent it from the patient, it was the first time the doctor tried any peptide and she found that the cerebrolysin or the Cerebropep in the BPC changed her life.

Just a little cheat sheet on some of the peptids for you. and hope you got some use out of it and I really appreciate the opportunity to speak for Boston Biolife and especially for the vets and i thank you for listening.

Before we wrap up we want to thank our sponsor Integrative Peptides for supporting this episode. If you enjoyed today's conversation, visit IntegrativePeptides.com and use the code PODLIFE, P-O-D-L-I-F-E for a special listener discount.

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