The Science Behind Laser Light Therapy to Heal Your Body Transcript

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Introduction and Speaker Background

Hi, everyone. I'm doctor Sanjeev Goyal, and today you're going to be listening to Doctor David Kushner. Go. David received an honors Bachelor of Science degree in molecular biology and molecular genetics from the University of Toronto, Canada.

He then completed his Doctor of Chiropractic at the Canadian Memorial Chiropractic College in Toronto in 1992. He was an instructor in microbiology and physical modalities at the Canadian College of Natural Medicine, Toronto, as well as anatomy, orthopedics and pathway physiology at the several private massage therapy colleges.

David joined MedTech international in 2011 as the Director of Education and Training, where he instructs monthly certification courses, webinars and advanced trainings in photo bio modulation, also known as low level light therapy, and lectures at conferences and post-secondary institutions throughout the Canada, USA and around the world.

He has presented 2017 North American Association of Laser Therapy in San Diego, California and the 2017 Africa National Chiropractic Congress in Cape Town, South Africa.

He also serves as a clinician at Meta Text Laser Rehabilitation Clinic in Toronto, operated by Doctor Fred Kohn. Hi everyone, I'm Doctors and Gargoyle and you're listening to advanced Anti-Aging and Technology Summit.

And today I have Doctor David Kunesh Ko, who is, chiropractor in the Toronto area who's going to be talking about photo bio modulation. Hi, David. How are you?

I'm great. Thank you. How are you? Good, good. Thank you so much for joining me today. I understand that you work at, at a clinic outside Toronto. And you provide, a treatment, based on this technology.

Photo, bio modulation. Right. So. So I'm a clinician. I'm a chiropractor by profession. I've been involved with, the technique is called a photo bio modulation.

And to it, I, as a clinician and chiropractor, we use it for different types of, conditions. But, you know, it can be used widely from everything from, you know, dermatological, dermatological issues, neurological issues, wound healing.

There's lots of benefits that the body can, can actually get from this. Yeah. I got interested in the field. I personally had some serious injuries and ended up coming to this clinic, and it really helped me recover.

And as a clinician, I had to really use that very much. So, so when I, when I got here and saw the, the effects, I ended up working with, Doctor Fred Kohn, who is the CEO of, Meditech.

And, and, and he manufactures and distributes, medical devices called bio flex, laser therapy or light therapy.

How Photobiomodulation Helped the Speaker

So I've been working with him in the team here for, for 10 or 11 years now. I'm the director of education and training as well. So, you know, I broadcast webinars and, and do the trainings of other doctors and clinicians.

And also, you know, work with the general public because we also offer devices to used at home for different types of issues as well. So interesting. We have we have a device ourself in our clinic, and I know I've attended your training about two years ago, so maybe before we even get into the photo bio modulation and how you're using it now at the clinic, if you could take us through, like, how did you even get into, like, under get exposed. You said you were a patient.

And so how did the this treatment, have an impact on your on your condition. Right. So, you know, in my training as a chiropractor, I was, you know, I was sort of, made aware of this type of therapy, but it wasn't really widely used.

But when I came here, I had, had some serious issues with, with my back, and, injury to my leg, a few other things as well, too. So, I wasn't really sure what to make of it because it's just light and you don't really experience or feel a lot during the therapy process, but what you start to feel is an improvement in your in your symptoms.

And I got me really interested. My background is in molecular biology and molecular genetics. So I started to read the research and I just found it really fascinating.

The research on how it actually works in these cells and the tissues that are trying to heal. And the more I read, the more I realized there was a lot of research out there, a lot of of, good clinical trials, a lot of evidence to support its use in clinical practice.

So, then I started to observe the clinic and Doctor Collins patients, and I saw a remarkable recovery, from everything from traumatic brain injuries and stroke recovery to wound care to dermatological and, you know, muscle skeletal issues like arthritis or what have you.

So the more I observed and, and saw the benefits of it, I decided that it would be something I'd like to use in my clinical practice. I have experience as an educator, and, and so Doctor Con brought me in as an educator as well as a clinician, and, and that was like I say, about 10 or 11 years ago.

So, so, you know, I've lectured at, conferences throughout the world and South Africa and, you know, in states, on on this topic of photo modulation, it's becoming a lot more mainstream now.

It's it's really not a pseudoscience anymore. Or and it really never was, but now it's reached more mainstream. So a lot of people are aware of the benefits of it, especially in the cosmetic and the aging, type of, modalities in clinics.

Because if you go to a medicine ball, it's not uncommon that you see light therapy devices and it works pretty much the same. So, a lot of people now are becoming more and more aware of that and the benefits of it, if you could give it like a little bit of a background on the, on the science, like how does how does it work and what is what is photo by modulation?

That would be great. Yeah, I use I like to use the analogy of, first of all, photosynthesis, which is of course in plants. And we all know that plants grow, they require, sunlight and that sunlight, is converted by chlorophyl in, in a plant, into chemical energy.

So it's called a photo chemical, reaction because it uses photons of light. And, it's that energy is conserved and converted into a form of energy that the plant can use to grow.

So in, in cells and in humans and other animals, we have, something similar to Chlorophyl. It's a it's called a photo acceptor. And the name is called cytochrome or cytochrome c oxidase.

And this molecule, this enzyme in mitochondria, or what is what controls energy production in cells. So we breathe oxygen, we eat food which turns into glucose.

Science of Light Therapy and Mitochondria

That's called aerobic respiration. And for this to happen you require this enzyme and other enzymes as well to produce the energy called ATP or adenosine triphosphate.

This is critical for cells to recover and to repair themselves, and to, you know, to fight the effects of, of aging, for example, as we age, these number of mitochondria in the cells, they decline.

This is why you feel old people often times feel tired all the time, or lack of energy is because the number of

mitochondria, become depleted and less efficient.

So there's a whole science to to understanding mitochondria and ways to boost the energy production of cells. And this is one way. And basically how it works is there's certain wavelengths of light, red in particular and near infrared, which is invisible, is absorbed by this enzyme, the cytochrome enzyme, and, in the powerhouses mitochondria.

And it actually increases the efficiency or the ability to produce this energy, this ATP. So basically, it makes your body more efficient using the oxygen and the glucose.

And it helps to, to fight inflammation. That oftentimes is associated with injuries and the aging process. So the inflammation in our bodies, whether that's in our gut or whether that's in our knee joints or in our brain, the better off we are and the healthier will be.

So that, in a nutshell, is basically how it works. That's very interesting. So so if we're you're basically saying that the sunlight, the some spectrums within sunlight are having this impact on these cytochrome enzymes in mitochondria.

So, does that just mean that being outside is going to have these healthy benefits, like getting sunlight just from being outside? Right. Well, there's a form of, therapy called helios therapy that uses natural sunlight.

And that goes back thousands of years since the dawn of man. Really? Humankind. And we know that exposure to sunlight is beneficial in many ways. Everything from treatment of vitamin D deficiency, like rickets, for example, or what have you, to, depression, and certain skin conditions, those kinds of things, the spectrum of light that, achieves that effect is varied.

It can be ultraviolet, it could be other wavelengths. But, in the case of this type of therapy called photo modulation, it's very specific wavelengths.

So sunlight, is made up of a whole bunch of wavelengths, you know, from ultraviolet, through the visible spectrum. And infrared. But, and it's, of course, it's essentially it's diluted.

Right. This type of therapy, uses, they're laser diodes or light emitting diodes, and to, to use very specific, electromagnetic spectrum like, red and and near-infrared.

And it's those specific narrowband wavelengths that trigger this reaction. Other wavelengths don't really do it for various reasons, including, your skin can block certain wavelengths.

The ultraviolet is a penetrate very deep. But it's just the way they interact with this enzyme in the body that these wavelengths are the are the ones known to cause this reaction.

So in fact, just being out in the sunlight, well, it's beneficial depending on how much dosage you get. Of course, it doesn't have the same effect because it's not concentrated and it doesn't enter the body like it would when you're using, these types of devices.

Does, can one have too much like, is that possible, have too much treatment of, let's say for. Right, right. Well it's, it's very much dosage dependent.

And by that I mean it's like a, it's like a drug in a way that, you have to have enough of the drug or in this case, the, the, the, the light to cause the effect in the body.

However, if there's too little, then there's really no effect. And if there's too much, it actually doesn't really benefit you at all. There's a negative feedback loop that occurs that actually, unfortunately, doesn't is not very helpful.

So when this is being applied, you can't just grab any red or near infrared light and apply it to yourself. You have to have the correct dosage on the skin and then the correct dosage, you know, enters the body to a certain depth or what have you, in order to try to achieve the, the benefit, there's a window, of, of a dosage.

But if there's too much, it's not going to hurt you. It's just not going to have a a positive effect. So, part of what we do here and what Doctor Con has spent three decades working on is getting these kind of dosage in, light.

Dosage, Safety, and Home Devices

And also there's ways of entering it into the body, like with pulsing the light or a frequency. Into the tissues as well. And so he's, he's worked on, on these protocols, the proprietary protocols that we put our into our equipment, knowing that, they have, during this dosage range and, it can help these different conditions.

So we were mentioning that you have devices at, the clinic now that use that patients can take home. What does that look like. And if you can just maybe give them what type of conditions would they be searching for?

You know, Doctor Conroy, he does a lot of patients who are coming from far away for treatment and they weren't able to stay in Toronto for any extended period of time or patients that we're just not able to come to the clinic as frequent as possible.

So, you know, he realized that. And so he developed, sort of a home version of the professional equipment that we use. And he'd been using that for for decades.

And the last, maybe 6 or 7 years, he developed, a new, easier to use, home system. This system is very much similar to what we're used in the clinic, except it doesn't have a, a class three B laser.

Of course, that's inherently could be dangerous to the eyes. We obviously are trained as professionals to to use these high powered lasers, but, the, these LEDs that we use in the home devices are much safer and as effective.

So they're little controllers. It's very easy to use. The pad is placed over the area that you're treating or what have you, as part of my, my role here is that I support, patients that use this equipment through webinars and training webinars.

So they get familiar with how to use the, these devices, usually they're used, or maybe 2 or 3 times a week. If you've seriously hurt yourself, maybe every day, sometimes they're used just for, maintenance or to feel to help your body overall.

And that might be used once a week or, twice a week, depending. But, essentially, you know, it's usually used 20 minutes to an hour every day. For different injuries or what have you.

So you were saying mostly for these are like joint problems in air, you know, like arthritis perhaps, or injuries. And are people using it for general well-being?

You were saying that it could give you potentially activating the my, my, you know, the the general well-being is there's been a lot of research over the years to show that it has a beneficial effect on on the blood, specifically, on on white blood cells and white blood cells, you know, travel in the, in your circulation, and they control inflammation.

And they can be trigger to either release, pro-inflammatory chemicals. That, of course, cause inflammation or make it prolonged. And they can also be triggered to release anti-inflammatory chemicals to help to resolve inflammation or to help to reduce inflammation.

And it seems that, it is the sort of our modulation triggers of white blood cells, to actually, immuno modulate such that it produces more of these anti-inflammatory chemicals and reduce the pro-inflammatory chemicals.

And this has a more, systemic kind of, reaction. In other words, this whole body reaction, because it's your blood. So when these white blood cells are triggered and as such, in this way, it can actually help overall inflammation in the body.

And and aging itself is associated with inflammation. So, from diet to, you know, exercise. And there's other things

you can do to reduce or, inflammation.

And this is just another way of, of doing it in a very safe, effective manner. So how you do that is you target the blood, so you might put it behind your knee where there's lots of blood vessels, superficial blood vessels.

And you would do that, just to, you know, to help to help with this sort of inflammatory, state of our bodies. Unfortunately, gravitate to. So what, even if you apply to one specific area, it can have a systemic effect.

Is what you're saying through the blood. Right. And there's been research to show that, that, by treating just one area, the effect on the blood or, but of course, the blood circulates and that will have an effect, throughout your body, of course, is stronger, closer you are to where you're treating.

But because the blood circulates, you know, obviously through the heart and then is pumped around, these benefits, theoretically can be helped, elsewhere.

So, you know, in general, it's, it's best to always apply the device where you have the problem. But if you're looking at sort of, the benefits just as a wellness type of thing, then then applying it, for a little bit longer period of time over, you know, large areas of blood supply then that can have that effect for sure.

Inflammation, Blood Effects, and Whole-Body Benefits

And, you were mentioning that the clinic is, has been treating for many years, patients with head injuries or concussions, post-concussion syndrome. Do you want to talk a little bit about that?

I know people come from all around the world to, to get those types of treatments right. You know, and this goes back to Doctor Con when he was treating patients coming in with, neck injuries, due to whiplash or, or concussions.

And he started to notice that these patients, you know, part of the symptoms of concussions are cognitive, so that, you know, everything from, memory loss to brain fog, headaches and so forth.

And he was noticing that when he was treating the neck and the upper cervical spine, the upper neck, the these patients, the cognitive, symptoms were improving as well.

So that got him interested in treating specifically these, what they referred to as traumatic brain injuries, as you mentioned, concussion being the most common, but other things like, like even stroke recovery or what have you.

And so the idea there was when you, when you treat the blood and the spinal cord and the spinal fluid, this all supplies the brain and the central nervous system.

But these positive effects that are described earlier will have an effect on, on the central nervous system. And to help, the injury process that are occurring in, in the case of concussion, it's a, a bruising of the brain and neurons are, are injured.

They don't work properly. And by reducing inflammation, this can help those cells and those tissues to heal as well. But this work caught on, to the point where, quite a well-known author and psychiatrist, doctor Norman Doidge, who's written.

Many of you might know him. He's written two books on, neuroplasticity of the brain, the way the brain, changes and heals. And he's been one of the New York Times best sellers and featured on documentaries, and so forth.

And, it just so happens that some of the patients, Norman Deutsch, we're seeing, Doctor Con and they ended up talking about these, these patients and, Norman, sorry to say, more and more patients with, these cognitive issues and, eventually, Norman wrote about, what we do and photobomb modulation and Doctor Con and his sequel to his first book.

And so that obviously raise the awareness of, one of the ways that you can help treat, and improve neuroplasticity, and neuroplasticity is essentially the ability of the neurons to adapt, and to heal themselves.

So, it's really by increasing the number of neuronal connections, to help with, recoveries from concussion and stroke and even to improve symptoms of neurodegenerative disorders like Alzheimer's and Parkinson's.

Now, this is all experimental work. But we're seeing very promising results, with, so when and for these, for these people who are having a treatment for these head to head, traumas, are they having, a red light put right, or like, on a, like a cap, like, or this putting it somewhere else in the body.

You know, we usually start with, in the neck, and the upper part of the neck. And, and it's not uncommon that we can also apply the, these lighter rays, over the, what's called a trans cranial placement.

So over the frontal, cortex and the the back of the occipital cortex and, temporal and try to lobes as well. And, of course, this all depends on, on what the problem is.

And, and everyone's obviously taken on a case by case scenario.

Brain Injury, Concussion, and Neuroplasticity

We've also been working with a neurologist in, in Durban, South Africa, Doctor Ashley Bonjean, who's who's been using biophysics and his clinic, in a, a patient, clinic in his hospital in Durban, in treating along with post-concussion syndrome, all these neurological types of conditions as well with, with, with really good results as well.

So what do you, you sometimes I go to some conferences and they have these huge, like, huge panels of red light, like, can almost supposed to go in for full body.

Do you think that it's just there's just more exposure, so probably more benefit. Like, what's your thoughts about these types of ideas? Pretty. The idea is pretty similar.

It's more meant as a as a general overall well-being. As opposed to, specific, treatment. When you're, when you're going for a specific, say, an injury or, condition like arthritis or, you know, a torn tendon or whatever, and then the therapy has to be directed to a certain depth, and directed at that area.

So that type of equipment would, wouldn't make sense to treat, those specific conditions, nor would it make sense to treat specific neurological conditions because you can't control the dosage in, in a specific area or what have you.

That would be similar to, as I mentioned earlier, like an overall sort of general wellbeing to, to treat the body. The difference is being in those, that type of equipment, the light doesn't touch the skin.

So there's a lot of reflection off of the tissue. So you have to treat a greater surface area. Our equipment is designed to have, what's referred to as a higher energy density.

So we don't need to treat, the entire body. We can treat, smaller sections that are with much greater intense light. And because it touches the skin, more of that light will get into the blood and have that effect.

Go ahead. Where do you think this field is going? Like, what do you dissipate? Are the next things that are going to happen in this in this field of photo bio modulation?

Well, some of the research is interesting. There's been talk of of embedded devices. So to treat chronic pain in the spinal cord, to embed, light devices that, you know, have their own energy source and surgically implanted, and this light is emitted, and it will reduce the inflammation and help with, with the, with the pain, level.

So I've seen, interest in that. I've seen work on, heart attacks from myocardial infarction where they're treated, a

bone marrow, and stem cells, away from the heart.

Early research was shown in pigs, and then they started to do with humans to show that, when you, this light increases the the number of stem cells and the activity of stem cells and stem cells are critical for the repair of any damaged tissue, including, myocardial, or, cardiac muscle tissue that's injured in a heart attack.

So they've shown benefits, treating a patient that's just had a heart attack, with light therapy to reduce the amount of damage that occurs in the heart itself.

For example, there's also been research on treating post-Covid, patients, around the respiratory cage, again, reducing inflammation, because we know Covid causes a, a cytokine storm, which is an inflammatory process.

So it makes sense that this therapy might be helpful for that as well. So there's been case studies and now clinical trials going on, to treat, that type of disorder as well.

You know, it's now being used a lot more for things like hair loss.

Future Uses and Where to Learn More

Because red light especially is known to help with growth of hair follicle cells and of course, in dermatology, in dermatology, to help with the aging effects of skin because, that works by, stimulating fibroblasts, which are found in skin, in skin and they secrete collagen.

And of course, collagen is critical for the integrity. And what we refer to as sort of. Yeah, you know, younger looking skin, because it helps with the, the thickness of skin.

So those are all some of the areas I've seen an increase in and research and interest in, for sure. That's that's really very exciting. Just to think about the, the hair loss piece, you know, I see there are some devices where people can buy these type of devices, red light devices for their scalp.

So is there is there something that you would suggest that what makes a person a good candidate? Is there some way we know from individual factors, or what they can do to make better response to these types of treatments?

Even any type of, photo, you know, any type of condition or even not even hair loss, how do you how do you choose to when there are differences in genetic makeup?

So some people respond better than others? We're not quite sure why that is. In the case of hair growth, you know, if a hair follicle isn't, is dead. You know, that can't be helpful.

It seems to be much more helpful when when hair follicles, are stagnated or they're not growing very well. Or these other cases where it's caused by hormonal changes or stress.

So it's not a genetic, type of issue, like, you know, male pattern baldness per se. You see that more common in women, but even in male pattern baldness, they can slow things down and reduce the inflammation and, and sort of make the hair healthier, for example.

But in general, as far as, how people react to a photo via modulation, that's where dose of gene comes into play, because, for example, your skin color is different than mine.

So the more the darker one's skin color is, the less likely light will get through it easily. So we have to adjust the dosage, for that factor. Of course, the body size is a factor, whether you're very muscular or thin or larger set or smaller set one.

Again, we have to adjust dosage. And, that's part of the excuse me, the training that, that clinicians get, when they, when they buy our equipment, of course, is to understand those differences and adjust accordingly.

So all this is taken consideration as well, of course, is there's a severity, whether it's chronic or acute, a mild to moderate or severe case of arthritis or what have you.

That's all part of the picture. Okay. You should our viewers go for learning more if they want to learn more about the bio flex laser, the human home unit.

Where can they go for that? Right. So, they can visit us, our website about flex laser, dot com. So or just Google bio flex laser. And to be able to find that information as well, there's lots of, free information there, webinars, that kind of thing.

I myself broadcast, you know, complimentary webinars every month. You can sign up for that. I often times will do very general ones for the general public, so they can just understand a little bit more about about this, type of therapy and to learn more about it.

For sure. They could do that. All right. Thank you so much today. You're very welcome, doctor.