

# ask DR. BEN

## PODCAST TRANSCRIPT

**Speaker: Dr. Ben Johnson**

**Episode 15: Stem Cells, Growth Factors, and Peptides\_Myth Busting**

Intro: Hello, and welcome to the Ask Dr. Ben Podcast. I'm your host, Ben Johnson. As a holistic-minded physician, I've spent the last 20 years looking outside the box and conducting research to find the true causes of skin conditions and other diseases. And while the focus of my work has been on aesthetic medicine and unlocking the secrets to reversing skin damage, this podcast will also include many other exciting revelations pertaining to you and your family's health and wellbeing. So let's get started.

Hey, everybody, and welcome to another episode of Ask Dr. Ben. So appreciate you following along as I share my thoughts on the beauty industry and on just general health tips, help empower you. I chose to come in and record this on a Saturday thinking it would be so quiet, and I'm hearing a drum solo happening in the background, which I don't know how much you guys are going to pick up, but if you do catch a little of that going on, I apologize, but I must push forward so that I can get you the information you're interested in, in a weekly and timely fashion.

The subject today is one near and dear to my heart. It's about Stem Cells and other cells in the body that produce growth factors. It's about growth factors versus peptides, and it's a long held question that many physicians have had, many estheticians and other skin professionals have had, and of course, many consumers have had. And there's a lot of misinformation out there. A lot of marketing campaigns being waged, and as usual, I believe I have consolidated the truth.

For some of you that may be new to listening to me, you may be thinking, "Oh yeah, yeah. Why is your information not biased? You own a skincare company." Well, I mean, the answer to that is pretty basic. All the options are available to me, right? I could have any sort of peptide serum I wanted. There's no exclusions. I could have any growth factors I want... well, that are currently being made, or I can opt for Stem Cell products, and I can have Stem Cell products from a host of different manufacturers. But I have isolated it down to one amazing manufacturer that is independent of me.

Yeah, it's a funny time right now because there is, I think, this awakening to the reality that we're all being played a little bit, especially in the skincare industry, and there is a redirection, an emphasis let's say, on value purchases. People are going to start looking at, "Well, do I really need that in my life? Is this really something that adds to the health of my skin in the case of growth factors, topically?" That's certainly part of the purpose of today.

Let's start here. Let us start with this idea of where is the best place to get your growth factors, and why do we even need growth factors? Within your skin, you have three main cells that are producing growth factors for you. They're the Stem Cells, the fibroblasts cells, and your macrophages, and all of these can be found in your dermis and deeper, pretty much, unless you have a wound going on, nothing is going to be sitting at the epidermal level, so this is deeper stuff that we have to process. That's going to become an important factor as we get going.

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But what is the growth factor? And how does that differentiate from a peptide? Well, a growth factor is interesting. In a military analogy, it would be the equivalent of a general directing the troops to go in different directions, merely by its presence, also by gene activations that... Listen, I keep reminding you guys, we are still just barely scratching the surface of a highly complicated system that is our skin. We have to use generalities in many cases, and growth factors are no exception.

These generals trigger repair activation, and some people believe they can trigger inflammation, which I will explain to you is really not what they do, but yes. They trigger repair activation and they oftentimes have, let's call them in continuing the analogy, colonels that are running around, sort of taking the direction and continuing the effort. And those subclasses of leadership are your peptides and cytokines.

Peptide is really just another way of saying more than one amino acid is joined together. And when two or more amino acids are connected, they oftentimes are communicating a different message and have a different role. The skin, because it's so complicated, because there are millions of transactions going on in your skin every minute, and I think that's probably accurate when you consider the entire surface area of the skin. If you have all that activity going on, you need a support network. You need these colonels, these peptides and cytokines, continuing to drive the process, and they become highly critical.

As you get older, you have fewer and fewer of these generals and colonels available, so your growth factors, cytokines and peptides are all declining at a rate somewhere around the rate of how your circulation declines. Let's call it 1% a year, starting at 25. By the time you're 50, you have 25% fewer of the growth factors and cytokines.

It matters. It has an impact on the health of the skin. But as I always try to paint the picture of: nothing is super simple. You can't just have a general telling the troops to get going on a repair project if you don't have troops. The Osmosis philosophy is this holistic skin model, which says, "Yeah, growth factors are amazing, but if you don't have the support network, if you don't have the nutrient base to respond to this new general's command, then you are not going to get that job done nearly to the level that you would be satisfied with."

Part of what makes the Osmosis protocols so effective, and I do believe we may be the only company creating permanent change, but even if there are a handful of others out there secretly doing it, there aren't many. The whole goal here is to create value, to know that your precious income, which is going to become more and more precious in the aftermath of this pandemic, you need to be focused on value.

And I think the [StemFactor](#) product speaks to value, number one, but also it is an important cog in the holistic effort to permanently rejuvenate your skin. And you may remember that I come from the philosophy that your skin already has the desire to be at 100%. It's only been limited by its environment. So, if you can change the environment, your skin will respond in kind.

Okay. Now you have the big picture. We have Stem Cells, fibroblasts and macrophages. They're all producing significant levels of growth factors and they are present in the skin, and sometimes there's a lot of Stem Cells that we'll call, I guess dormant is a good image for it, but they're just unassigned. Because they're unassigned, they don't do anything for the

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skin, and they hang around. One of the conversations out there in the whole aging conversation is about what how many Stem Cells we have and how do they deplete over time, and are our reserves dwindling?

I think there's some truth to that, and certainly the more your body is poisoned from our environment and/or pathogenic activity, the more Stem Cells are at risk. I think, well, in general, if they're not particularly biologically active, they're less susceptible to attack from, say, chemotherapy and the like. But they are stimulated in those events, I would imagine, when there's massive cell death happening due to the DNA damage of, say, chemotherapy, then you're going to trigger the activation of some of these dormant Stem Cells. But they're present in your skin and going, so that we're talking about the ones that are active.

You may not have been too familiar with the idea that fibroblasts, which are known as the cells that create collagen and elastin and ever so critical to the aging process, are also massively important, very, very, very important in the growth factor production, so you want more of those. And macrophages are more important. If you have listened to my vitamin A conversation, you've heard me talk about how we use 1,3-beta-glucan in our vitamin A formula. And that is specifically to trigger more macrophage recruitments, because macrophages are amazing little creatures.

There's this some sort of a documentary maybe on Russian cosmetologists, if you will, going out to the swamps to get the bug slime because of the presence of macrophages in it. There's these... I'm trying to remember now exactly. I shouldn't have started this story because I can't remember exactly where they got the macrophages. But the whole story was about putting slime on your face that had macrophages on it for the benefit of the macrophages, and that sort of works. But honestly, macrophages are not going to work their way into your cells. You need to really encourage macrophages to happen from the inside out.

Macrophages are like fibroblasts, and it's a really interesting phenomenon. They come and they go based on need, and they come and they go based on the circulation in your skin. Once again, and what you're going to hear about today, is growth factors are really important in the increasing your new blood vessel formation... vascular neogenesis. That is a factor that Osmosis puts high on the list in our permanent age rejuvenation.

Yes, these cells are important. You want to recruit these cells for more growth factors. You want your own natural growth factors produced as much as possible. Remember, your skin is an AI, artificial intelligence, brain. It's connected to the network. It has access to all the information and it is constantly adapting to the situation you've put it in, and it is constantly attempting to repair old damage when possible. If there's not a lot of circulation and those cells aren't present, then there's going to be less rejuvenation possible, if that makes sense.

All right. That's big picture. Then I think one of the questions people often have about growth factors in the world today is, "Well, why would I choose to get a growth factor from a Stem Cell or a fibroblast cell versus..." And I haven't seen any efforts right now to use macrophages to make growth factors, but that would be an interesting addition, I would think, should be coming if we isolate macrophages and keep them viable.

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But yeah, "Why would I choose that over, say, the manufactured ones. The ones that we can make in a lab?" Because that was really the first phase of this whole growth factor wave when ingredients like EGF, epidermal growth factor, came to market, and everybody got really excited because it literally does increase collagen and elastin manufacturing, in particular collagen manufacturing. I shouldn't say that I've seen the study on elastin.

And brands came into fame using high levels of EGF, so why wouldn't I just want to use EGF knowing how good a growth factor it can be for rejuvenation versus using a Stem Cell generated population that's a much wider variety and maybe a smaller particular amount of that EGF growth factor and several other versions of growth factors instead? That's a valid question to ask. And then, what is the advantage or disadvantage?

Just so you know, how they make a protein or growth factor, how all these peptides are generally made, growth factors included, is they program E.coli because they can genetically program bacteria to put chains together of proteins. They program it to mimic the exact chain of EGF, but it can't ever quite be exact because your molecules in your body are three-dimensional, and they have a higher level of stability and a higher level of functionality, meaning they are more active and more present when the body makes them because the body makes every protein in a three-dimensional manner. Whereas an E.coli programmed cell will actually make a linear molecule, so it's less stable, less effective, but you can do it in higher amounts. If that makes sense.

You can't really tell a Stem Cell, "Crank it out in this particular molecule." Because that's a deep level of DNA programming that we're not doing now. There are some people working on this idea, but again, I suggest to you... I don't think that's actually the best approach, and you're going to hear why here as we get into some of the research.

Okay. You have these cells, and one of the big question marks is, "Where do you get your Stem Cells? Is it safe to take Stem Cells out of a human body? Am I transferring HIV or some disease into a cell culture?" And the answer is no. First of all, all the donors of Stem Cells that are used in labs for this type of work are screened patients for all of those more serious diseases, number one. Number two, HIV is not transmitted through a Stem Cell per se, so I don't think that is, in particular, a worry.

But then there's also just the general idea of, "Well, am I putting someone's sort of nastiness on my face?" Because a lot of people misunderstand the whole Stem Cell science to be putting Stem Cells on your face. Now, you can do that. And in fact, there are many plastic surgeons right now putting Stem Cells *in* people's faces. Some are putting them *on* people's faces and trying to get them to somehow absorb through creating holes in the face or something.

But in general, what's happening is they're taking fat and they're trying to isolate from the fat, the Stem Cells, because that's where the Stem Cells sit oftentimes is in your subcutaneous fat. They find the good, healthy Stem Cells, and they try to populate those in different parts of your face, say, in a facelift procedure or something. Is there efficacy to that? What I would tell you is there is a longer, a higher likelihood of survivability doing that, so that if you're getting a fat transplant, yes. It is preferable to have more Stem Cells because you're less likely to have this uneven loss of the fat when you transfer the fat.

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But Stem Cells themselves are more likely than not dormant and are not necessarily likely to be activated. Is there a huge advantage to it from a rejuvenation perspective? I don't think... I'll say the jury is out, but my gut is not huge. Is there an advantage from a fat transfer? Yes. We identified that already. Yeah, you can get your fat cells from subcutaneous fat when you're making growth factors and cytokines, and I guess peptides because they produce them all. Which choice do you pick from?

Basically, well, there's three choices right now. You can get it from fetal cord blood, you can get it from a subcutaneous fat or maybe fetal tissue, aborted tissue, more often than not. I don't think maybe the omentum, they can pull some Stem Cells out of the omentum. I've not heard of... Well, I've heard of that being a source. I have not been interested in it. And then you have the bone marrow, and there's a marketing story behind the whole bone marrow story.

Now, my feeling in general is if you're looking for a Stem Cell that's sort of pre-programmed to generate growth factors and cytokines related to the skin, then it's better to grab a Stem Cell out of the skin. Whereas the bone marrow Stem Cells may have more of an affinity towards growth factors that increase, say, red blood cell formation, which I don't need more red blood cells. I need more blood vessels, right? That is a distinction. It's a slight nuance, but I tend to believe that's the case.

Now, the marketing argument for bone marrow Stem Cells has been, "Well, they produce less inflammatory cytokines." Okay, so let's break that down. What they're saying is, in some studies, they found that these bone marrow Stem Cells weren't generating these particular markers in our blood that are associated with inflammation. It's a little bit trickier to get this picture, but it's so clear to me. I hope I can say it to you in an accurate way.

Your body could produce inflammation. Your body responds to damage with repair markers, repair proteins and cytokines that are associated with this thing we call inflammation, but we forget that it's really the repair phase of it that we're describing, right? I mean, I've said it before, so I'll be brief. If you sprain your knee and your knee swells up, the damage is not all of the inflammatory cell markers that are in your knee, that some people would like to try to suppress. The damage is the sprain of the ligament, right? You focus your attention not on suppressing the repair activity or worrying even about.

The one that always comes to my mind is interleukin one. Oh my gosh, interleukin one is in so many inflammatory processes. Do you want to know why that's more present in Stem Cells in the subcutaneous tissue? Because subcutaneous fat is your detox center, your bone marrow isn't. Subcutaneous fat, Stem Cells in that region are used to dealing with "inflammation", are used to dealing with repair. They might have a slight propensity to being in that mode.

Now, if you put the bone marrow Stem Cells and the subcutaneous fat Stem Cells into the same environment, in other words, you present them with the same sort of stimulants, and let's say nutrients, then they convert to producing the same sort of Stem Cell growth factors, cytokines, and peptides. It's all about the environment. It's a marketing story. I tend to prefer subcutaneous fat because it's already sort of been in that programming mindset. That means right out of the gate in my lab, when they start feeding those cells, right out of the gate, they're making the right stuff. Whereas if I put a bone marrow set of Stem Cells into a

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culture, and I'm trying to get epidermal growth factor amongst other skin goodies, it might take longer to convert and it may never convert.

That's the summary of that. They talk about young versus old, but listen. A Stem Cell is going to be a high producer until it's not, and I think the numbers are always what I defer to in this, so you got to always look to the numbers. Let's talk about some numbers. Oh, by the way, the Osmosis approach, the lab I chose uses Stem Cells and fibroblasts. You can go to some of the early, early growth factor work.

And this is 20 years ago. The same technology that's used in, say, the product called TNS by SkinMedica, where they use fibroblasts-only culture. And that produces a decent product, but it is limited because it's not going to be as complete, right? If you add Stem Cells to that mix, you're going to have a much broader, much more complete cytokine, peptide profile, which is what's proven out in my analysis of the industry. I think that's all you need to know for that.

Then we get to what are the cytokines and growth factors that are produced? What are the important ones? What I have highlighted is that the most important ones are the growth factors related to cell and tissue survival. We want to extend the life of cells as long as we can. We don't want them to go into what's called apoptosis, where they sort of self-destruct for either because they're no longer serving a purpose and, yes, your cells do that. Tragically, as much as we love fibroblasts and all that they do, they literally pack up and leave when the job is done.

You want to create as much cell survivability as you can, and you want to have growth promoting, so things that increase collagen and elastin, and things that increase blood vessel formation, those growth-promoting growth factors cytokines, and peptides. Wound healing ones, right, so those associated with increasing the repair of the skin, because your skin is constantly trying to fix the damage. As we mentioned, the blood vessel promoting ones.

Then, I'll put with quotes around it, "The anti-inflammatory growth factors." And I guess I would say here, since we don't fully understand what the "inflammatory growth factors" are really doing and how they work with the anti-inflammatory growth factors... Here's what we're really talking about. Different phases of the wound repair process. With these different phases of wound repair, in one phase, we might call that the inflammatory marker, but what I would call that is early wound repair.

And then you have the anti-inflammatory growth marker, which is late stage wound repair. I think that's a more apt way to describe it. Within that list, some of the ones I find important are insulin-like growth factor, building protein, tissue inhibitor, proteinase, the DiCo-Pf1 protein, fibroblasts growth factor, epidermal growth factor, urokinase-type plasminogen activator, the angiopoietin-1, angiogenin, vascular endothelial growth factor, tumor necrosis factor, transforming growth factor beta.

Those are some of the critical ones, and they're sort of meaningless to read off in one sentence because I don't expect you to memorize them. And honestly, your brain has better things do and better purposes. If you've got a storehouse for memory, I'm not sure you necessarily need those in your head. You need to trust that the source that you're getting your Stem Cells product from has an adequate and robust population.

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I want to emphasize that. My belief is that when you influence the skin with just one growth factor or just a couple of different growth factors, then you will cause an imbalance, right? You're pushing the skin in a direction... Your skin right now, as you sit here today listening, has a full compliment of your growth factors, just in a reduced amount. You want the full compliment.

Just the fact that a growth factor is hanging around in that region is not going to send your skin off into a tizzy as long as you have the other growth factors present, and the skin can continue on with a balanced effort to do this wound repair. For example, the studies showed that if you just apply EGF to your face, you encourage the promotion of cancer cells. But if you apply a well-balanced presentation, and this is a study we did on our product specifically, it actually slowed melanoma cell activity.

Now, again, I want to be clear, that is not reversing cell activity. That is slowing cell activity. If it was reversing, that would be curing cancer, curing melanoma, which would be wonderful, but not doing that, but we're not promoting it. In fact, we are inhibiting it. And you say, "Well, how can a growth factor population do that?" Well, it does it because it has things like tumor necrosis factor in it.

We have anti-cancer growth factors in our skin as well, and you want to present all of them at the same time. Now, also within the mix, you're going to want things like fibronectin and little chunks of collagen and elastin, and different proteins that your skin manufactures. All of that is in this product because we use the Stem Cells and fibroblasts together. We're getting a whole mix of them, and we're getting them in different sizes, so you actually have way more bioavailability of the growth factors, cytokines and peptides, because you're getting them in different stages of their formation. A fully produced collagen molecule is not going to make it into your skin, but in early stage one is, and that's just kick starting the collagen manufacturing for your skin.

Now, the effects of [Stemfactor](#) are relatively modest compared to some of the other serums in our big four collection of [Rescue](#), [Catalyst AC-11](#), and [Renew](#), but it is still an important cog in the wheel of rejuvenation. I generally recommend it for people over 30, and really important for people over 40, because at 40 you've now got a 15% reduction in your growth factor population. It's starting to make a real difference in the ability for your skin to stay healthy. For that reason, it's important.

We did studies with [Stemfactor](#). We did studies showing that in 40 women, it had anti-aging effects that were significant. We did the melanoma study, as I mentioned. We did gene activation studies. We did fibroblasts cell culture study, and with all of them, the results were fabulous. We had great activation, great proof of concept, and a lot of it will speak to the delivery systems.

We do a lot here to do work on penetration, and growth factors in particular are tricky things, but because you're getting a growth factor that's three-dimensional, made by real human cells, it's already going to be more bio activating, more bioavailable and more stable, so it lasts longer in the bottle, which is one of the other challenges of making peptides that are linear is they tend to fall apart more easily.

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Then you have this exosomes technology, which has really cool technology, and it's basically this sort of covering, this sort of shell, that growth factors are given when they're put into the body by ourselves in the body, and they are being formed here. They're being formed in our products, these things called exosomes, and they help carry the growth factors into the skin.

Now, where growth factors get in is really in the follicle level. But that's just fine because the follicle level reaches deep into the dermis. As long as you have this exosome and your follicles, you have the ability to get penetration of these growth factors, and that's why this product actually does create permanent change in the skin. It has, of course, things that are increasing new blood vessel formation.

Again, we're trying to bring your skin back up to a level like it was near 30. It's a high goal. It's a lofty goal, but to get your skin feeding itself like it was 30 is how you get your skin to make collagen like you did when you were 30. And for those of you who are 30 going, "Wait, what? Is this a good age for me? What's going on?" This is the age of your decline. It's all downhill from here. I'm so sorry to tell you haha. All of us 40 plus years think back, "Oh, to be 30 again, with the wisdom we have today." Yeah, that's the target we have.

You can have an impact on wrinkles. You can have an impact on firming and plumping. You have an impact on collagen manufacturing short-term and long-term, and all those things are justifications for why you want to use this product. I will say that when you use it, you want to put it on your skin right after you wash your face. Your face should be probably dry, but right after you wash your face, this is the first product to go on because growth factors, they have trouble getting into the skin. And if you put them on, say, after your moisturizer or if it's mixed in with a moisturizer, it just makes it harder for the growth factor to get next to the follicle. We've got to get it next to the follicle in order for it to get into the follicle. And if it's trapped in some emulsion, higher up on the surface, then of course it isn't going to make it. Sorry to say.

From a safety perspective, our product is very safe. I can't speak to the other products because everybody has a specific way they feed their cells in the lab. And how you feed your cell will determine the kind of growth factors it makes. I literally had one growth factor manufacturer whose whole goal was to starve them. Of course, this was for budget purposes, but he didn't tell us that until later, but he starved them and he told us how amazingly strong they were and resilient because they survived starvation. I'm like, "Well, but how are they going to make anything if they're starved? That defeats the purpose. Make them gluttons. I want the gluttons Stem Cells that are just overwhelmed with nutrients and can make whatever it can possibly make."

One of the cool things that came out of it was we had measured in our analysis that we have made over 600 growth factors, cytokines and peptides in these products, 560 of them we were actually able to identify with Eliza, which is a scanning test that basically takes the shape of a molecule and determines what it is. We know how much of each growth factor we're making and we can see how balanced the presentation is. There's no one in the world who's got a product with 560 identified proteins, cytokines and growth factors. That speaks a lot to the balanced presentation that this provides.



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Again, having micronized collagen and elastin, that's human, because when you get your collagen molecules from, say, a cow or a pig, you're having to treat them for disease and you end up having damaged molecules, and they're large because they're already pre-formed. You're grabbing the actual collagen from their skin. A preform molecule, it's not going to penetrate. It might cause some plumping, but it's not going to penetrate.

I think that pretty much covers this subject. I hope you enjoyed that today. I hope to see you next week or have you hear me next week. There's no one talking back to me here in this format. But as usual, thanks for listening, and catch you again soon.

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