

Dave Asprey ([00:00:00](#)):

You are listening to the Human Upgrade with Dave Asprey. Today we're going to talk about something that is near and dear to my heart. It is losing weight. If you've been listening for more than five minutes, you probably know that I lost a hundred pounds and I've kept it off for a long time. My medical grade equipment from Upgrade Labs continues to repeat that I'm at 6% body fat and I'm never hungry. So it's almost like this biohacking thing works and it keeps working. But if I go back to when I was heavily overweight, if I could have taken Ozempic or Wegovy or one of the GLP one drugs, I absolutely would have because I had tried everything on the planet to lose weight. So when these drugs first came out, I think before the big trend happened, I had one of the senior researchers come on the show and I tried it for one week, feel like I had morning sickness the whole time and said, good God, I don't really want to feel this way. But there is good evidence that low dose GLP one agonists are good for longevity, maybe not at the same doses that we might take for weight loss. And I know that a lot of people get offended, well, these are pharmaceuticals. You shouldn't do it. Well, they're actually peptides, they're signaling molecules in your body, and there's a case for losing weight being more important than whatever side effects might happen. Speaking of that, magically the danger coffee just arrived. Okay.

([00:01:40](#)):

Our guest today, Dr. Ra Singh, is an expert in things like ozempic and wegovy because he understands aging and he understands muscle loss. And we're going to go deep on these topics. He's the Chief medical officer of Timeline Nutrition, a biotech company that makes products that change cellular health and aging. I have been taking the timeline product since it first came out religiously because the 10 years of data as a longevity substance behind it are very, very convincing. So I actually take four capsules of timeline every morning because I think it's just a really good bet if you're into longevity. The last time you heard from Dr. Singh was episode 9, 9 9 in 2022, where we talked about that specific substance. This episode though is about GLP one, like Ozempic and Wegovy. What's going to happen to your skin? What's going to happen to your muscle, and what's going to happen to your aging if you choose to use these at different doses? Also, let's talk about Ozempic face. What do you think? Dr. Singh, welcome back. Yeah,

Dr. Anurag Singh ([00:02:50](#)):

Pleasure as always. Love to talk to you and your audience.

Dave Asprey ([00:02:54](#)):

As I mentioned in the intro, I did not like my experience on Ozempic and just for people saying, Dave, you cheated. No, I used it for one week to do a podcast before it was cool, and that's the only time I've ever used it, but I kind of want to use it every other week at low doses. I just don't like feeling like I want to throw up all the time. So if I wanted that, I would just get pregnant. Oh, wait, I'm not going to do that either. So we're going to set that aside. I am not a user of it, but I want you to explain your take on the GLP one class of drugs. Are they good for you? Are they bad for you?

Dr. Anurag Singh ([00:03:30](#)):

Yeah, so these GLP one drugs, whether it's semaglutide or it's commonly known as Ozempic or Wegovy or the Tri Eptide, which is the Lilly drug that is called as gyro. These were classically developed as diabetes medications. These were the new stars and managing diabetes. And what they found was that they had this specific, as you said, is the peptides that block the GLP one glucagon stimulation, and that basically allowed people to start researching on their obesity effects. And there were such, the trials showed some very striking clinical evidence, and there's a big buzz in the big craze now around these

drugs. I think what has been sort of buried and shadowed in all the hype around most of these drugs, if you look at the trials cause about a 10 to 15% weight loss in about 12 to 18 months. Time span is the side effects and the most common, if you look up all these New England Journal medicine articles around these trials is, as you said, nausea and sort of GI issues that accompany them.

[\(00:04:47\)](#):

But that's one side of the thing. The main reason I'm here today is I'm a muscle biologist and a longevity trialist, and we have been studying muscle decline with the aging process, and we've been saying that and we've been studying 1% of muscle every year after your third, fourth dec of life. What they saw in these trials with Ozempic was that in addition to, out of that 15% weight loss was 10% fat, which is great. So they are great drugs because they're going to help a certain section of the population that is obese and being obese is making them prone to cardiovascular diseases obviously and other chronic diseases. But you're also losing 5% of that weight loss is the muscle loss, and that 5% is about five to 10 pounds or even more in certain cases. So that's what from for me as a muscle scientist in the trialist was something very concerning because you're losing almost what you're supposed to lose in 10 years in about one year with these,

Dave Asprey [\(00:05:57\)](#):

I've seen a lot of reports that say that the muscle loss is substantially more than five pounds for a lot of people or 5%, it could be more like 10 or 20. So what's going on with, I mean, 25% of your muscle mass, it feels like losing that much fat is probably still more important than losing that much muscle because you can put the muscle back on if you do something. Is that the right way to think about this?

Dr. Anurag Singh [\(00:06:23\)](#):

So losing muscle mass in that fast of time is almost akin to starvation. So you almost like starving. That's probably the closest analogy I can give you in terms of what they're seeing in these trials. Now what happens is a lot of people when they see is these are expensive drugs. They cost, I think about thousands, 1500 bucks a month to maintain, and a lot of people wean off after a year or two years of the fat obviously slowly comes back muscle

Dave Asprey [\(00:06:55\)](#):

Unless you do something.

Dr. Anurag Singh [\(00:06:56\)](#):

Unless you do course, agreed, unless you keep your protein intake in your diet high, unless you keep exercising, unless you improve your muscle quality. So yeah, you're spot on there.

Dave Asprey [\(00:07:07\)](#):

So let's assume that someone listening is a couch potato and they don't eat a diet low in seed oils and it's got lots of processed foods. They go on semaglutide or one of the other weight loss GLP one drugs and they lose most of their fat and 20% of their muscle over the course of a year or two. What's going to happen to them when they stop taking the drug if they don't change anything else in their lifestyle?

Dr. Anurag Singh [\(00:07:38\)](#):

Well, if they don't change anything in their lifestyle, the fat is going to come back.

Dave Asprey ([00:07:42](#)):

It'll come faster though because they have less muscle

Dr. Anurag Singh ([00:07:45](#)):

And it's something we call in our field sarcopenic obesity, which means all the good muscle is going to be taken, the space is going to be taken over by the fat. And when you're young overweight and you're trying to be in shape, probably it's not that big an issue and you can probably use the residual muscle mass and muscle quality to sustain certain muscle strand over a decade or so. But if you're in your fifties, sixties, seventies, I think for the aging population, it's a big, big worry. And that's the sort of little alarm bell that I want to sound out here is that if you are an older adults overweight on these medications, then the muscle is not going to come back unless, as you said rightly, you're going to try to proactively address those

Dave Asprey ([00:08:36](#)):

Issues. My recommendation for obese people who are interested in semaglutide or wego V or any of these other drugs is that you shouldn't touch it unless you're willing to eat one gram of high quality protein per pound of body weight, no matter if you want to throw up or not, and you're willing to up heavy things, at least like pushups and squats or coming to upgrade labs and it doesn't take long, but you've got to do something to stimulate the muscles and have enough protein if you're willing to do that. I think these are longevity drugs. If you have a hundred pounds of fat to lose like I did, you could lose the fat and keep the muscle. That would be very longevity, right?

Dr. Anurag Singh ([00:09:14](#)):

Yeah. And the time it takes to lose, I mean these, I'm not saying it works for everybody, but at least in the trial data that if you see people are losing 15% of their weight in about 1215 months, that's remarkable.

Dave Asprey ([00:09:29](#)):

It feels like you should budget about \$200 for high quality protein supplements every month and another 300 \$5,400 for a personal trainer or an upgrade labs membership or someone to hold you accountable to eating the protein and doing your squats, because if you don't, the drugs are dangerous. But if you do do that, I think it's a good bet. But some people get really mad about that. Why do people get so angry about the idea that a drug could help you with weight loss?

Dr. Anurag Singh ([00:10:01](#)):

Yeah, I think it's part of, it's a tough question. Why do people get angry?

Dave Asprey ([00:10:06](#)):

They're dumb. No, I'm kidding. Yeah,

Dr. Anurag Singh ([00:10:08](#)):

No, I mean, C people like to think they're taking a magic pill and they don't have to move or walk around or eat the right and they can keep eating the fast food or processed food and things like this and keep off the weight. So if you tell them suddenly A, this is not the miracle drug you think it is, then obviously

there's a big reaction to that. But I totally agree. I mean good dietary counseling along with these GLP one medicine and good physical activity training with a versatile trainer, geez, that's the magic combo.

Dave Asprey ([00:10:46](#)):

If you'd like to learn more about timeline, ure litan a, go to [timeline.nutrition.com/dave](https://timeline.nutrition.com/dave) and they'll give you 10% off. If I could go back and these drugs were available and I talked to my 20-year-old self when I was going to the gym 90 minutes a day, six days a week for 18 months and not losing weight, I was eating the wrong foods. I thought low calorie and semi vegetarian was the way to go because of propaganda. That was part of the problem, probably not enough sleep was it? And also thyroid dysfunction. I had a lot of stuff going on, toxic mold and all, but I would've told myself, Dave, fix your thyroid, fix your testosterone. Get it up to above a thousand for men. And the number for women varies and where you are in your cycle and what age you are, but you want it to be at the high normal lift heavy for two months to put on the muscle that you might lose when you go on the drug.

([00:11:38](#)):

And you might find after two months of adequate thyroid and testosterone, you don't need the drugs and you'll save a lot of money. But if you do still need the drugs, at least you have the muscle mass and now you have the habit of exercise. I promise you that if your thyroid and testosterone are adequate for a 30-year-old, whether you're a man or a woman, it depends, obviously you're going to get better results from the drugs. Of course, I'm not a doctor, so is someone with adequate testosterone and thyroid going to respond better to GLP one drugs?

Dr. Anurag Singh ([00:12:07](#)):

So I think testosterone levels that there's a lot of, I mean if you see how the pharma industry is now moving in this space, they all know this problem exists, right? They allow lilies and novas, they all know it that this is a storm brewing in the background because almost this is the first a hundred billion dollars drug. And so one out of every five adult is going to be on it and long-term, everybody is going to have, and it's just not muscle bone mineral density. If you look up the papers, that's impacted too. Metabolic rates are impacted too. I mean, if you're burning fat at such a high rate it such a short time, you're going to impact your basal metabolic rate as well. And so what these companies are now, these pharmaceutical companies are doing is obviously they're trying to look for the next generation of drugs that have a muscle sparing effect. And I think the solutions already exist. These are already very good drugs that irrespective of whether you're doing it as a lifestyle choice or you're actually obese and your doctor is recommending them, or if you compliment them with certain lifestyle choices and nutritional companion products such as high protein, or we can talk about other sort of muscle quality and mitochondrial products that boost, keep the muscle quality high, then you have a very sustainable solution. Long-term.

Dave Asprey ([00:13:37](#)):

In my big longevity book, which is called Superhuman, I talk about seven pillars of aging. And these are the main systems to maintain, to stay young. And one of the big ones is tissue loss or sarcopenia that you talked about. So as you age, you lose muscle mass. Now I track mine using the upgrade labs, cell health analysis, and it's a clinical grade system, and my muscle mass has been absolutely constant or going up even though I've probably lost a good 15 pounds of fat over the past two and a half years just by tweaking various nutritional things, just continuing to play with fasting and all the things that biohackers do. One of the things that I did do though, and it's probably been what, four years now, as I started taking a timeline, and this is a uan, a supplement that increases mitochondrial function and

muscle output, I would not attribute my leanness or necessarily my maintenance of muscle only to that. But given all the research you guys did on Muscles and ULI and the timeline stuff, I think it probably played a role. How important is mitochondrial function for people who are on semaglutide or GLP one drugs?

Dr. Anurag Singh ([00:14:53](#)):

It's very important. As I pointed out, your metabolism goes for a toss really, because you're losing so much fat in such a short period of time, you're losing so much muscle that is seen only in starvation or in 10 days of intensive care admission in a hospital. That's the amount of muscle you're losing. So I think focusing on mitochondrial health and mitochondrial quality and energetics and keeping the muscle strength and muscle force intact while you're on these therapies of targeting weight loss, I think that's very key. And more and more you'll see a lot of research coming out and we ourselves are looking into it.

Dave Asprey ([00:15:34](#)):

I'm looking at the comments from the upgrade collective. This is my mentorship group, and Beth says she was in this situation, she's been on Manjaro for about a year. She's gone from 400 pounds to 300 pounds. Congratulations, Beth, as life-changing weight, just absolutely life-changing. And by the way, guys, our upgrade collective.com, you get to be live on the shows and ask me questions and be part of the community, which is fun. But she says she finally started changing her diet and started exercising, and now her doctor says, you should be on the lowest dose for the rest of your life. So low dose ozempic versus high dose ozempic, what are the differences?

Dr. Anurag Singh ([00:16:17](#)):

So I think they have done studies where they have rammed up the dosing and over 12 months shown a quick weight loss and then sort of put people on a maintenance dose. And that seems to work. But the studies, the longest study I've really seen is up to 18 months and they've compared it to people who kind of totally weaned away from the drug. And then as we discussed earlier, the fat comes back very quickly. So I think it makes sense to keep the low dose. I haven't seen just the data comparing the low dose to the high dose in terms of head-to-head, but I have seen it in the maintenance phase and that makes sense.

Dave Asprey ([00:16:59](#)):

I think that that's an advisable thing to do if you have the money for it or if your insurance company will pay, especially for people who are really obese, and I have so much empathy for being in that situation because I haven't talked about this in a while, but fat people, and I can use those words even if you're triggered, I was one. We are willpower athletes. Every single bite you put in your mouth, your biology is screaming at you to eat it. And you can only use willpower to ignore screaming for so long before you're going to eat just half the cookie and then you're going to beat yourself up for it. But people with healthy metabolisms, the 20% or so of people who are left, they don't have the same voice in their head around food unless there's some kind of emotional eating issue going on. It's not a biochemical signal. Does OZEMPIC or the other GLP drugs, do they quiet cravings or is it just that you're too nauseous so you don't have cravings?

Dr. Anurag Singh ([00:17:57](#)):

Yeah, it could be that, but I think the biology is that they hit on the glucagon plus the reward center in the brain that sort of is linked to the delayed gastric empty. And so you don't feel the urge to, as you

said, eat that half a cookie that much. And that's why I think these are the successful drugs they are because they hit sort of a dual axis, the gut brain axis of the reward that connects our eating behavior. So that's what the new biology on these drugs is saying.

Dave Asprey ([00:18:33](#)):

Let's talk more about what GLP one agonists do or GLP one inhibitors, and if you're just tuning in guys, basically OZEMPIC and Wego V and other drugs like that. So what do they do?

Dr. Anurag Singh ([00:18:44](#)):

So they in a bit, basically GLP stands for glucagon like peptide. They block this sort of, you can call it the hormone glucagon, that basically whenever you have this craving having more glucose spikes up, and so when it goes up, you tend to eat more to boost your glucose levels to give you that energy. And so these peptides, block glucagon secretion, and that basically allows more insulin that basically regulates these cravings. And that's how these were created as antidiabetic drugs initially, but they hit this reward center in addition and delayed gastric emptying, which gives a dual anti-obesity and antidiabetic effect.

Dave Asprey ([00:19:29](#)):

That's a pretty powerful effect. And there's also the direct signaling of the hippocampus. I mean, these are changing brain structures, at least brain structure response in a way that you're probably not going to get from other things, except doesn't fasting do the same thing?

Dr. Anurag Singh ([00:19:44](#)):

Yeah, so if you take a look at all the fasting studies and you look at these studies that are called the OZEMPIC trial is the step one trial, and the other one I think is the sustained trial basically. I mean, these basically achieve weight loss faster compared to maybe a two year fasting protocol, but that fasting protocol is much easier and it preserves the muscle. I think that's the key point that I want to also make. When you compare such studies to here, you're not preserving the muscle, and that's the word I'm trying to see it in everybody's sort of lingo that these drugs, these GLP one drugs are hitting the muscle and you need to think about preserving the muscle. So fasting would preserve the muscle.

Dave Asprey ([00:20:30](#)):

Fasting will preserve muscle. If you're doing intermittent fasting, if you're doing a 10 day water fast or even a 10 day, the way I talk about in fast this way, you can have black coffee and it actually works better and you suffer less and you can have MCT and still get those effects. Sure, yeah. But it seems like you still lose weight on a longer fast. But if you're doing 18 or 24 hour fasts several days a week, you get the hippocampal effects. You stop having cravings after a little while. And that was a big surprise to me. The first time I did a four day fast was in a cave in outside Sedona led by a shaman, and she'd dropped me off in the middle of the desert. And I was really concerned. I believed that if you didn't eat six meals a day, you'd go into starvation mode, which actually means you start dying.

([00:21:19](#)):

And that's not true. But I was really worried, and right before I walked into the cave, or at least took the trip out to the cave, I had three protein bars for just in case. And I'm like, oh man. So I left them with a shaman, and it was actually kind of scary to be honest. And this was 2008. I hadn't learned as much as I know now about fasting, and after four days I had zero hunger cravings at all, and my energy was so high that I ended up walking 10 miles and climbing the wrong mountain to get out of there, and I just felt

superhuman. And this is without any ozempic or anything like that. So I would just encourage listeners to try fasting, but it doesn't always work. Why would fasting not work for someone?

Dr. Anurag Singh ([00:22:04](#)):

Well, I think the problem with fasting is the compliance, right? The challenge of containing a sustained fasting protocol over time,

Dave Asprey ([00:22:12](#)):

Do you really think it's compliance? I know people who are religious about it in dollar lose way.

Dr. Anurag Singh ([00:22:16](#)):

Well, for me it is. So okay,

Dave Asprey ([00:22:19](#)):

I can see you owning that. What I find is that men and women make the mistake of over fasting. In fact, when my publisher came to me, this was a few years ago, and they said, Dave, write a book on intermittent fasting. I'm like, I did. It's called the Bulletproof Diet. People have lost a couple million pounds on that. It was the first big intermittent fasting book. And they said, no, we need another one. And I went deep on it and said, there is a case for it because over fasting, just like over exercising or getting really sick or starving yourself, it's a metabolic stressor that raises cortisol. So if you have excess cortisol because you're over fasting, it's very hard to lose weight. And if you suppress thyroid function so your body thermos goes down, it's hard to lose weight. So it's like fasting the right amount, not too much, not too little. It seems to be the hard thing for people,

Dr. Anurag Singh ([00:23:07](#)):

And I can certify to that, and that's why I got in the business of looking for compounds that for people who are not as religious, I'm a weekend warrior, so I do my physical activity over the weekends and I fast once in a while. I just find it hard to continue it. And that's why we discovered these natural compounds that sort of hit the similar biology as fasting or regular exercise.

Dave Asprey ([00:23:33](#)):

I'm a continuous Guinea pig, so once I'm fully convinced that something works, I like to stop doing it just to see if the bad stuff comes back. So I went through about the last year where I said I'm going to intermittent fast a lot less than I normally do. So this is a variable that I'm fully convinced makes a difference. And if anything, I got a little bit leaner probably because I am also manipulating my cortisol levels artificially because my body has never made enough cortisol so I can have too high or too low pretty easily. But what I found is that my speed of aging went up from 69% to 72%. Brian Johnson is in all the news with a similar message to a superhuman, and he's speaking at the next biohacking conference. I've interviewed him on the show, really interesting guy. And his speed of aging is 72% on a diet that includes collagen protein. Other than that, and it's kind of funny. So 72% speed of aging without ozempic and with much less intermittent fasting, but I feel like I'm aging a little bit faster. I don't fast as much as I did. Does that line up with what you know about aging?

Dr. Anurag Singh ([00:24:50](#)):

Yeah, absolutely. I think you probably have heard a lot of folks talk about these different hallmarks of aging, and it's a continuum, right? It's not if you tackle one or two, if you hit on nutrient sensing or deprivation or mitochondrial dysfunction, you're not going to correct for everything. And that totally makes sense.

Dave Asprey ([00:25:11](#)):

It would be kind of funny if you had a friend with a high-end sports card and like, man, I changed my tires every three months. This going to last forever. You'd laugh at them. But when it comes to longevity, a lot of people are saying, well, there must be one thing. And as far as I can tell, there's a lot of things, but if you want one thing, it's have badass mitochondria and fasting is a part of that. I think that timeline is a meaningful part of that. But there's a whole bunch of other supplements like adequate minerals, your fat-soluble vitamins, and of course longtime listeners, Dave's about to say vitamin dak.com, which is the fat-soluble minerals that I take that I created, sorry, fat-soluble vitamins that drive minerals and of course endangered coffee. So what would happen to someone who eats junk food but doesn't have adequate minerals or fat-soluble vitamins or B vitamins, and they're basically nutritionally not prepared? What happens if you go into PIC and you don't have the nutrients versus if you go into PIC and you do have your vitamins and minerals?

Dr. Anurag Singh ([00:26:14](#)):

Big difference. We've taken a look at people who have bad nutrition and bad physical activity levels. We've taken chunks of their muscle tissue through biopsy and looked in very deep in how their mitochondria are talking to each other and how they actually visually look with electron microscopy and they look in real bad shape. They basically look like spaghetti inside a big bowl. And we've compared them to people who are very lean and fed and taking their 10,000 steps running, preparing for half marathons, and their mitochondria are, you could look at a 75-year-old who's maintained a very good diet in very good physical activity levels or the IL tears and the mitochondrial like a 30-year-old. So you can reverse aging if you focus on your mitochondria and you focus on your diet and keep the fat away. I mean, so that's why I think a guy taking ozempic with all the sort of the cellular pillars of health, vitamins, minerals, and nutrients that boost mitochondrial health is the best possible solution.

Dave Asprey ([00:27:25](#)):

I agree. It just seems like selling the drug without the lifestyle is a problem, but when have you ever seen a drug company promote a lifestyle? It's almost like they can't patent a lifestyle and they can't sell it to you for a thousand times what it costs. That's all right. I've got a solution coming for that as well. Come to the biohacking conference guys, and I'll be telling you about a new tool I've got for you so that you don't have to worry about that anymore. Now, something else I wanted to ask you about. I knew you focus on muscle and metabolism and even measuring mitochondria is difficult. At the biohacking conference, there's a new test out of uc, San Diego for mitochondrial function, and Dr. Patel, the lead creator of that is going to be there talking about how this works for me, going back to I think 2015, since then, I've been searching for a way to measure mitochondrial function accurately. And there isn't a lab test until now. You had to actually punch some of your muscle out with a punch biopsy and it was very involved and painful and no one's going to do that. So now we have an accurate test for it. Is there a way you like to look at mitochondrial function?

Dr. Anurag Singh ([00:28:43](#)):



Yeah, so I'm a trialist. So in clinical studies, there's only two ways that you do that. One is, as you said, a bit invasive. You have to take a chunk of the leg muscle to look at the mitochondria under an electron microscope, which not everybody would be very keen on doing. And the second way is you make them exercise in an MRI like machine. Again, not everybody has access to an MRI like machine, and you look at the rates of a TP and depletion with exercise. I know very well the technology you were mentioning from UC, San Diego, and I've spoken to Dr. Patel, I think they're onto something. I think like any technology, it's in the early adopter phase where you need to over time show that that's capturing the decline in mitochondrial function at a tissue level, at a whole body level. And that is amenable to catching how interventions would behave. So I think it's a very powerful tool. We are ourselves planning to test it. And I think having such a thing where just with a few drops of blood, you can tell your mitochondrial score or your mitochondrial health score is a very powerful tool.

Dave Asprey ([00:29:54](#)):

I'm excited for more technologies that come online. I investigated Dr. Frank Shallenberger's technology. In fact, we had it at the Beverly Hills upgrade labs for a little while. It was a VO two max exercise bike and a full metabolic cart with a new algorithm. But you had to be fasted, come in in the morning and just beat yourself up on the bike for an hour. And it turns out no one wants to do that, including me. So it's one of those, you could do it, but the pain involved in getting the results isn't worth the results because you could also just how's my energy level, which is a good way to do it.

Dr. Anurag Singh ([00:30:33](#)):

So that's what we do. We have with MIT Ural Tenay, the trials we run, we see an effect on VO two max of improvement of 10% in peak VO two or a few months of supplementation. But we realize it's not something a consumer in real world setting can readily perform an exercise test with all the challenges. So yeah, any tool that has, we've looked at now biological ages as we are actually looking at that with a similar technology of giving a few drops of blood. Can you look at these DNA methylation patterns and predict the efficacy? And would that be reflective? Because if you're doing mitochondrial changes on immune cells that are reflective of what's happening in the whole body, maybe you can pick it up and it seems like this is a good technology. Of course, there's so many clocks there that everybody loses it.

Dave Asprey ([00:31:24](#)):

One of my concerns, any drug that delays gastric emptying, which is what ozempic and things like that too. Well, that means you got food sitting around in your stomach for longer and the bacteria in your gut are going to break the food down, maybe not in a beneficial way. Do you see increases in endotoxins? And longtime listeners have heard me talk about lipopolysaccharides from bacteria and how they cause inflammation in the brain and slow mitochondrial function, which is why having a good microbiome matters will you mess up your microbiome with ozempic?

Dr. Anurag Singh ([00:31:58](#)):

I think there's a high probability you would just, those studies have not been done yet, and it would take somebody to basically sequence the microbiome over longitudinal intake of ozempic and show that anything that has such a rapid metabolic effect, I would be very surprised if it doesn't have an effect. And I think people who are trying it are anyway over be two B and their gut microbiome is already as gut dysbiosis. So yeah, imagine the effect of these drugs and the already dysbiotic microbiome.

Dave Asprey ([00:32:33](#)):

I'm going to ask my friend Naveen Jane to do that. At one, it'd be an easy test. You have a bunch of people, I dunno, it just could be 25 or 50, take a test, then go on ozempic or something similar, and then do a test three months later. And if you find a lot more of the bacterial byproducts that come from just having food sit in your gut basically rotting. What that means though, for people who are on ozempic, if it's delayed gastric emptying, a really smart thing to do would be to take betain HCL, which increases stomach acid. If you take too much, you'll get heartburn. And if you do that, take baking soda, you'll be fine. And then also to take digestive enzymes with your meals, and that way you'll absorb all the protein from them because the last thing you want is rotting protein in your gut because then you'll have well bodybuilder farts because rotting protein gives you really, really bad gas and butane acts like stomach acid, and it helps to sterilize food in the stomach.

[\(00:33:37\)](#):

It also can reduce heartburn if it helps to close the little valve at the top of the stomach. And then the enzymes are going to help to break things down so you get less bacterial byproducts. So it seems like I should just publish my ozempic support protocol at this point because there's a lot of things you'd want to do. In fact, Hey, Joey, will you send a note on that to the team? I'll write that up and we'll do a blog post on it. And guys, if you're going, I want that. Well, why don't, if you're watching this online, if you're on Instagram, you can just DM GLP one, just DM me that, and then I'll respond with a link to the writeup I'm going to do for you, because now I'm not a doctor. I'm just will call me an expert in mitochondrial function and metabolism without a degree in it.

[\(00:34:27\)](#):

But all these mechanisms of action makes sense. And all of these things that I'm recommending are things you probably should do, even if you're not on the drugs, they're just going to make your body work better so the drugs can do what they're supposed to do. What else would you do if you just had an unlimited checkbook and someone's going to go on ozempic and we've got eat more protein, lift some heavy stuff a couple times a week, take digestive enzymes, take batan, hcl L. Was intermittent fasting still something they do, or are they going to lose too much muscle? Well,

Dr. Anurag Singh [\(00:35:00\)](#):

They can do intermittent fasting, but I have to mention that they should support their mitochondrial health in parallel with products like myop timeline.

Dave Asprey [\(00:35:13\)](#):

I'm glad you said that. I would definitely add that. So if you're doing the full Stack River, you're spending a thousand plus dollars a month on these drugs, you really should be spending a couple hundred dollars on supplements probably before you try the drugs, but this is just worth it to maintain your metabolism. I would absolutely include timeline, not just on the show. Like I said, I take four of those, which I think is a double dose. I take that every day because there's really good evidence. It took 10 years to do all the research and to come out with that compound.

Dr. Anurag Singh [\(00:35:43\)](#):

And the researcher who discovered GLP one and how these peptides work, she works. She heads a big laboratory in the National Institute of Aging from where all the technology got licensed, and she's actually now testing MIT Pur Oli because she believes that that can be sort of a companion product that can not just keep your muscle quality high, but have effects on sort of insulin resistance and keeping your glucose levels in check. So a lot of times the people who are weaning off these products can take

these companion nutrition products as well to keep their metabolism in check. So yeah, this is something we are running right now, but the National Institute of Aging,

Dave Asprey ([00:36:27](#)):

It's interesting. One of our upgrade collective members just said, Mito Pure is amazing. I noticed a difference for sure, worth a cost. And I don't remember the monthly cost. It's something like 50 bucks or something,

Dr. Anurag Singh ([00:36:40](#)):

Right? And a subscription, it's close to 80 bucks,

Dave Asprey ([00:36:43](#)):

80 bucks a little bit more than that. So it's not cheap. But the 10% improvement in mitochondrial function for 80 bucks is not a bad investment, I would say. And increasing mitochondrial function if you're obese, could have a side effect of helping you lose weight, right? Because your mitochondrial burn more energy. Your body has to get it from somewhere. So if you're eating appropriately, it'll get it from fat.

Dr. Anurag Singh ([00:37:04](#)):

Yeah. You'll see so many new studies come out in the next year or year or so where people are going to combine ozempic with things like high protein or ozempic with MIT pulike products and really show muscle preservation. I think that will be the holy grail inflammation in the effect in gut microbiome. I think this is a total Pandora's box. When it open, there will be all sort of ramifications, and you'll have probiotic companies saying, oh, your Akkermansia is gone with ozempic and take akkermansia. So I think research is two words. I always say Reiner, people find something and they rush to sell it like these pharma companies. And then you realize that all these side effects associated with

Dave Asprey ([00:37:47](#)):

It, there certainly can be side effects from drinking too much water. People die in marathons all the time from that because they don't know that you should put salt in your water if you're going to drink it. I do think Akkermansia would be a meaningful addition to an ozempic protocol. And I've had I think three podcast episodes about this specific kind of gut bacteria that actually helps you with your GLP one levels. In fact, I just had a recent podcast about that. There's also sperming, which is a fasting mimetic and a post biotic that could be a helpful addition along with acetylcarnitine and coenzyme Q 10. I'm just going through my mental database. What would I do for that? Am I missing anything?

Dr. Anurag Singh ([00:38:32](#)):

No, I think it's creatine, maybe.

Dave Asprey ([00:38:34](#)):

Oh, good. Of course. And for listeners, creatine is dirt cheap. There's a lot of companies for the last 25 years who've said, my version of creatine is better than that version of creatine. They all work, and there's probably a couple that are nominally better than others. About two to four grams a day is a really, really good idea. And if you're a male and you start on creatine and you get lots of hair shedding, it happens in a very small percentage of people. If that's the case, it's not the thing for you, and you

probably have some other mitochondrial blockade or you're lacking some minerals or B vitamins or something. We don't know why that happens, but I would just warn you, if you try it and you start losing hair, pay attention. But for the rest of us, it's cognitively enhancing. It's metabolically enhancing, it's muscle enhancing. It seems like it's a good plan if you're on a plant-based diet. Well, number one, stop. Number two, you could, and by the way, you can be vegetarian. I'm just saying don't be vegan and do this, and then you need to take extra creatine because found in red meat, but you're not going to find creatine in garbanzo beans or some other pseudo superfood.

[\(00:39:44\)](#):

Is there a difference between vegans, vegetarians, normal diet people and carnivore people on the way they respond to ozempic?

Dr. Anurag Singh [\(00:39:53\)](#):

I don't think it's been studied, to be honest.

Dave Asprey [\(00:39:55\)](#):

It hasn't been studied. Mechanisms of action. What would you posit? What would your hypothesis be given all?

Dr. Anurag Singh [\(00:40:01\)](#):

I think it would not be that different, but I do think that in being weak, probably your sources of high protein are pretty, unless you're really paying attention, are limited. So maybe you lose the same amount of muscle mass, but yeah, you'll probably have bigger effects because yeah, you're not taking all the animal protein, et cetera to supplement it. So probably bigger muscle problems, I would assume.

Dave Asprey [\(00:40:36\)](#):

I would guess that because there's two variables that matter. One is how much protein actually three variables,

Dr. Anurag Singh [\(00:40:45\)](#):

Quality of protein, see?

Dave Asprey [\(00:40:46\)](#):

Right? So there's three variables that matter. There's how much protein are you taking? Are you absorbing the protein you take because you're able to digest it? And the third one would be what is the amino acid availability? And even our very best highly processed vegan proteins, they don't digest as well. And the amino acid availability scores are very, very low compared to dairy protein or compared to eggs or compared to eating animals. So I would say maybe if you're plant-based and you want to go on ozempic and you're just not willing to revisit your lifestyle and look at deaths per calorie from your vegan protein, which is very high, by the way, you might maybe consider a broad spectrum amino acid supplement on top of it to help you. Does that make sense?

Dr. Anurag Singh [\(00:41:39\)](#):

Yeah, makes sense.

Dave Asprey [\(00:41:40\)](#):

Absolutely. I think we've created a pretty good protocol here.

Dr. Anurag Singh ([00:41:42](#)):

Yeah, I think you can trademark that Ozempic companion protocol or support protocol. Yeah.

Dave Asprey ([00:41:48](#)):

Nice. Well, the point of my work is to shine a light on people doing research maybe who haven't really found a platform yet. And this is why Peter Atia was on the show before he had a podcast. Andrew Huber Moon was on the show before he had a podcast. Tim Ferriss was on the show before, already had a podcast. Although frankly, everyone knew about his work before that. But it's like now they're big names they didn't used to be. And then there's a ton of researchers like you who probably aren't, I don't think you're planning to write a book and build a podcast platform and all that, but your research is fascinating and your knowledge is really broad. So to be able to pick your brain and to let people listen in, that's what this is about. It's like how do we find the experts and just learn? So thank you for collaborating on

Dr. Anurag Singh ([00:42:35](#)):

Oh no, this pleasure is mine to give again, as you said, to have a platform to talk about the science and our North Star as a scientist is always good science and good scientific evidence and how that translates into the real world. And so you are that bridge into the real world. So thank you for that. Yeah,

Dave Asprey ([00:42:53](#)):

You're very welcome. I do my best. Plus I'm just curious. This is fun for me. I'm a nerd. I want to talk about something that's personal for me. It's Ozempic face. Yep. So like I said, I've only used one injection to do a podcast on it, but I've gone from weighing 300 pounds to weighing 200 pounds and running around 6%. Anything below 8% body fat. I have hollowing of the face. Now, when I was a devout raw vegan many, many years ago, I had some of that as well. In fact, I got down to about 176 pounds. Well, what do you know? I wasn't eating much protein, so I lost a lot of muscle, but I did lose fat as well. And there's that gaunt dark circle under the eye vegan look. I definitely had that. And now I don't have that look, but I do have a lean face. So because I had extra skin, if you look at my old pictures from when I was 23, I'm round faced. So I see more lines here. I forgot what you call these, the frown lines, the ones that nasal label folds is what they're called. And people who go on ozempic, man, what happens with their faces? Why does it happen?

Dr. Anurag Singh ([00:44:07](#)):

Yeah, their skin goes through, it's all the fat that goes away, and that causes such massive effects on skin hydration and skin barrier. And so what you see is basically what you described. They have this hollow face with shrunken eyes kind of. It's a

Dave Asprey ([00:44:24](#)):

Starvation look.

Dr. Anurag Singh ([00:44:25](#)):

It's a starvation look. Yeah. That's the closest analogy. Ozempic is basically a drug that causes, and so you're getting thin, but you're starting to look very different than how you look the U back. And so that's

the sort of dermatological problem that a lot of these aesthetic medicine doctors have sort of red flagged with ozempic use. And again, you have to proactively work on it. So not saying people with ozempic need to think about fillers and all the cosmetic solutions out there, but there are, and we've been looking, and it turns out mitochondria get hit too, with the aging and rapid sort of loss of fat and the ozempic face kind of syndrome that you're describing, mitochondria compromised and their energy gets compromised to. And so we have taken a sort of a 360 look, and we have found that by hitting and keeping your mitochondrial quality in the skin tissue high can also result in sort of ablating or dampening some of the effects of skin aging. And maybe even with ozempic face,

Dave Asprey ([00:45:42](#)):

It makes sense that for long-term starvation, which is what happens if you don't eat the right amount of protein on ozempic, which is hard, well, of course your mitochondria are not going to respond well to long-term starvation. Short-term, lack of nutrients or lack of energy is good for them. Just like going to the gym is good. But if you were lifting for eight hours a day for a month, you're actually not going to what happens to your body over that because it's too big of a load. So when people get this ozempic face, getting adequate protein is going to help, but you still lost a lot of fat. You still have a lot of skin and skin tightening procedures are available. I've talked about using soft wave, which heats the layer underneath the skin to tighten collagen. Some people will get fat injections of their own fat.

[\(00:46:26\)](#):

Brian Johnson talks about doing that. I haven't had fat injections, mostly just because kind of painful. It's a pain in the ass. And frankly, I don't have any fat to harvest. I mean, I've never been this lean. I mean, I look at pictures of myself, I'm like, good God, I don't even recognize myself. I am not complaining. But I'm just constantly fascinated that it's even possible because some part of me still, in fact, there's studies that show that your picture of yourself is actually an average over the last seven years. So even seven years ago, I might have had another 1520 pounds or something, but some of it has to go further back. So some part of me still remembers Triple Ripple at 46 inch waist and seeing this leanness. But the downside is if I want stem cells from fat, or if I want fat for a fat transfer, I have to eat a bunch of junk food or something to put on fat, which would be a huge pain in the butt. And I don't like how my brain works when I do that. But increasing mitochondrial function while I do that, it makes it less painful. But then it's harder to lose weight. So maybe I'd have to stop taking timeline if I wanted to get fat. What do you think?

Dr. Anurag Singh ([00:47:34](#)):

Well, we have not run any studies where we have stopped wind away. People like the ozempic trials, but I don't think it's a good idea. Like I always say, it's hitting the same biology as regular exercise and fasting. And would you just do exercise for a few months and then stop and think that you've got lifelong effects with that? No. So it's something that it's part of your lifestyle and you got to keep at it. And we have these it sort of inside out solution now. So we have the oral nutrition products that hit mitochondria and that we'd have the topical products that also keep skin mitochondria healthy.

Dave Asprey ([00:48:10](#)):

I definitely use the topical products as well because mitochondria in the skin's really, really important. And my girlfriend keeps stealing my MIT pure stuff. Come on, man, leave it at my house. But oh, I think she has an excuse for, that's why I ordered extra. So there we go. One of the reasons Ozempic face is an issue is that okay, you just look different. But a lot of people, they see it and then they get social anxiety or they start isolating themselves. It happened to a good friend of mine where over a very short period

of time, she was suddenly just skin and bones. This is a person over 60 and just for a month or two there where I just found she was less social and didn't want to go do stuff. And until she fortunately ate a bunch of protein, went off the drugs and put the muscles and everything back on.

[\(00:49:05\)](#):

But yeah, that weird skin and bones thing that appears suddenly in your face and in your body can be disorienting for people. So the psychological effects of rapid weight loss without maintaining muscle mass, it is something that we don't talk about enough, but I think it matters because end of the day, even if you say, well, I'm not a vain person, how you look affects how you feel. And that's why I have no issue with longevity treatments that are just to make you look the way you want to look, right? I think it's a bad thing if you're injecting chemicals or something that have a big downside. But if you can find something that's reasonably healthy that makes you how you look, you'll probably be more social, which will make you happier and it'll make you live longer too, because a social life is one of the most important things. Alright, I wanted to get into some more science. Talk to me about Euro Litan A, this is the timeline supplement and how it works to support weight loss on GLP one, like Ozempic specifically.

Dr. Anurag Singh [\(00:50:04\)](#):

So what is known about Uase? So it's a gut metabolite or what we call a postbiotics. So it's being made by the gut microbiome, the healthy gut microbiome. Now, what has happened during the human evolution, we've all moved from eating fruits and nuts and fresh food and moving to eating a lot of processed fast food. You've lost that healthy gut microbiome.

Dave Asprey [\(00:50:31\)](#):

Do you think We really ate a lot of nuts during evolution. I was just thinking because I have a walnut tree on my organic farm. I have eaten two walnuts over eight years. The only other thing I could do is I could shoot or trap every squirrel in the forest. They steal 'em. I even wrapped them in paper and tied them up and the stupid crows came down and untied the string. Okay, they're smart crows. And my kids were really upset. We've been growing these walnuts and we never get any. So I don't think we had that many nuts. They were like an opportunistic thing every now and then.

Dr. Anurag Singh [\(00:51:02\)](#):

So that's how Euros discovered, because in these farm Iberian pigs were always eating acorns or squirrels who were eating nuts. They started finding that in their muss, there was this byproduct that they thought was just a waste product called. And then we started looking at the pomegranates and the nuts and the berries, and we found that it was not the, the polyphenols, the antioxidants in these fruit, but it was really these complex phenols getting broken down into simpler gut metabolites. And that was how we discovered Euro today.

Dave Asprey [\(00:51:43\)](#):

I didn't know that. I always thought it was a raspberry thing.

Dr. Anurag Singh [\(00:51:46\)](#):

So squirrels may run fast because they're all high on Euro today.

Dave Asprey [\(00:51:51\)](#):

And one of the things that the indigenous people of North America have been eating forever is acorn flour. The problem there is it's very high in oxalic acid. So you better have some unusual gut bacteria or unusual metabolism for that not to harm. Those are nuts that are in abundance. When they fall, they're everywhere. But almonds and walnuts are not like that. And if anyone listening has not had a chance to try that Iberian in pork or anything from a pig that just ate acorns, it's some of the most flavorful meat you'll ever have. But I did not know that it was actually full of Euro litan. A really cool story.

Dr. Anurag Singh ([00:52:31](#)):

Yeah, yeah. So we've gone, we went around the world because we were asked to show that the origin of u Tenay was from the nature. And so we went around, we even got breast milk of women who were drinking pom grate juice, and we found it was even in the breast milk of certain people who obviously had the right gut microbiome. So one third of us have that gut microbiome, the others don't.

Dave Asprey ([00:52:56](#)):

Lemme get that straight. If you're one third of people and you eat pomegranates or maybe raspberries and acorns, which I don't think you should actually eat, you would then be able to make a small amount of Euro litan A. But the amount that's in MIT PU is the equivalent of eating something like 20 pounds of pomegranates and then having the right gut bacteria and then converting them over. So this is something you're not going to make physiologically in any normal environment, which is why you take it as a supplement.

Dr. Anurag Singh ([00:53:25](#)):

So the exposure you will get is very small in that it's unlikely to give you any health benefits even if you're producing it. So it's the equivalent of drinking six glasses of pomegranate juice or eating three big bowls of raspberries, which unlikely you're going to do it.

Dave Asprey ([00:53:40](#)):

And can I just take a little side note here? I'm going to tell a story about raspberries. Back when I was a raw vegan, of course I ate lots of raspberries and lots of beets and kale and spinach and all that stuff that you might've heard me talk about. Isn't that good for you? But after I quit that and I started eating grass-fed meat and what became the Bulletproof diet, and it was a diet for fertility from my very first book, I still was going to the farmer's market and I was buying maybe 10 boxes of raspberries every week. And I would lay 'em out in the fridge so they wouldn't spoil, and I would just eat them. They're good for you or we've all heard that. And after a few months of this, I just had to pee, but my bladder wasn't very full and I had to pee really bad 30 times a day, 20 times a day.

([00:54:28](#)):

And it was one of those things, if I don't pee soon, I am going to have to buy some adult undergarment kind of things. So I went to my longevity doctor, this is back to 2005 ish. And he's like, I don't know what's going on. So I went to a urologist and they stuck a camera in, well, my urethra all the way in. Okay, this is one of the most traumatic procedures I've had, had my bone marrow taps twice when I'm awake. That's nothing compared to having a camera. And at the end they said, we don't know. I'm sitting there kind of shaking and white in the face going, what just happened? And I eventually figured out it was caused by raspberries. And the reason for this is raspberries are as high as spinach in oxalic acid and oxalic acid will form razor sharp microscopic calcium crystals that specifically cause 70% of kidney stones and irritate your urethra.

([00:55:26](#)):



So once I stopped eating those magically, the symptoms went away. And I've had so many friends, especially women who were saying, oh, I've had interstitial cystitis for so long and I get these frequent urinary tract infections. I'm like, step away from the almond, step away from the raspberries, stop eating beets and kale and spinach and magically in three days my symptoms are gone. So I would just tell you, if you want to get ULI A from pomegranates, well don't eat the pomegranate seed because it's also high in oxalic acid and don't eat raspberries because it's high in oxalic acid. And this will aid your tissues over time by causing calcification everywhere in your body. So the only way to get enough ULI a that I'm aware of is to use timeline. There isn't another path to raise these levels and get the metabolic benefits. And trust me, you do not want a camera there.

Dr. Anurag Singh ([00:56:18](#)):

So back to your question, how it's going to help people in EMIC that are having probably compromised sort of mitochondria or poor muscle quality is we've seen that mitochondria are the factories where protein gets synthesized. Mitochondria are the factories where, so what we have seen is that we improve mitochondrial function in about four weeks with the intake. And that translates to better muscle preservation and better muscle strength and endurance with two to four months. So that's how it's going to help people who are ozempic and losing muscle along with the fat, of course.

Dave Asprey ([00:56:56](#)):

Okay. I am such a fan of Ozempic and Wegovy and the other GLP one agonist drugs at low doses for longevity. And I would just say fix other stuff before you do the high dose stuff. But if you can't lose weight, being obese is going to make you more susceptible to every one of the big four killers in my longevity book. If you're obese, you're probably going to get diabetes, which means you're probably going to get heart disease or cancer or Alzheimer's or all three. And those are the big four killers. So losing weight is the most important thing you can do, but losing weight and maintaining muscle mass is a nine out of 10 importance right After just losing weight. And since you can increase mitochondrial function so you don't get the other damage that comes from what's essentially long-term starvation if you're using these drugs and not taking care of yourself. I think there's an argument for medipure and you guys actually did some clinical studies around taking miop around cellular energy production. So talk to me about whatever evidence you have specifically about GLP one and Miop Pure.

Dr. Anurag Singh ([00:58:06](#)):

Yeah, so well we haven't done a trial with Ozempic in combination with Miop Pure, but because that would be a drug trial for a nutrition product. So what we have done is we've induced muscle atrophy much like the rated that Ozempic would do. And the way you do it is you basically stick a cast on a single leg of a healthy person and in two weeks they lose 10% of their muscle mass just because they can't move around. So that induces as rapid a muscle atrophy as ozempic or starvation, and then you give high protein and high protein plus Miro pure supplementation and you see sort of the effects improving muscle strength and endurance. And we are still looking in these trials at how we impact on GLP one, et cetera.

Dave Asprey ([00:58:59](#)):

Okay. I was hoping you would talk about activation of genes that control collagen organization and assembly because that's part of the face Yeah.

Dr. Anurag Singh ([00:59:11](#)):

That we did with the topical application. Not yet with the oral product. So what we did similarly is when people who have this sort of skin wrinkles and skin sort of fast skin decline when they apply the topical MIOP Pure, we saw that applying miop Pure for eight weeks was helping in boosting collagen production. When we would take skin biopsies in these people and study this collagen production and it would dampen the inflammation because such as fast loss is also causing what we call sort of extrinsic skin aging and really ramping up the skin inflammation aspects of these medicines. And can

Dave Asprey ([00:59:55](#)):

I ask you a question you won't like? Yeah,

Dr. Anurag Singh ([00:59:57](#)):

Sure.

Dave Asprey ([00:59:58](#)):

I have probably 10 different topical skincare things that affect the longevity of the skin and clinical studies. And some of them I'm buying because I've seen all the research and some of them they get sent to me for trials. I'm like, wow, I like this stuff, but I find I really can't smear 10 different things on my face every day or I would be able to peel something off because I would just have too much on there. What would happen if I poked holes in my MIOP pure capsules and squirted them into some other stuff? Or just to be honest, I have mixed my miop pure skincare stuff with other stuff, so I'm only going to smear one thing on, so it's 50% mito pure and 50% whatever other stuff I'm playing with. How do I get all that stuff on my face?

Dr. Anurag Singh ([01:00:47](#)):

So if I understood it, you're saying that what if I broke open a capsule and took whatever's in the capsule and put it on my face? Well, or

Dave Asprey ([01:00:55](#)):

Squirted it into whatever facial stuff I have. I know listeners are saying I want the benefits of medipure, I'm taking it orally, but either they can't afford topical and oral or they already have topical stuff they like, but they want to add medipure to it. Is there some way to do that? Do you have a serum I could put in something else?

Dr. Anurag Singh ([01:01:12](#)):

Yeah, so we do have serum. We have different skincare products of day cream and night cream. Now it's important to mention that these have MIT Pure as the star active in them. That is obviously delaying acting on the mitochondria. We have other stuff in it. We have TR lows for example, which is an autophagy inducer. So it was kind of hitting autophagy in autophagy at the same time we have boosters in it, so it's kind of acting on bioenergetics of the skin. So the skin products we have and why you should take them over the other 10. Well, if you believe the science, then I would say the one we have is the most clinically studied skin longevity product and it has all the good actives in it that you won't find in a single topical product.

Dave Asprey ([01:02:03](#)):

It has a long list of actives for sure. And that's why I use it. I'm just sort of like, how do I add some other active that's not in there? And it may be that I'm better off to open some other serum booster and put a peptide in my mito Pure or whatever. I don't know the right answer for this. I don't know if you do,

Dr. Anurag Singh ([01:02:21](#)):

That's a good idea. Maybe are future versions. You're giving me me ideas now.

Dave Asprey ([01:02:26](#)):

I mean, honestly, I would buy a pure serum booster that was relatively strong, mito pure that I could add to other stuff, especially like whole body. I have enough stuff sent to me that, and I mentioned before, I've lost a hundred pounds. Fortunately for me, most of my extra skin is in my low back and my butt, which is great. So I have decent abs and I've done a whole podcast on removing sagging skin without surgery and all, but I got to take care of the skin on my low back and my butt, otherwise I just don't have enough fat there. So I like the idea of putting miop pure everywhere, but I'd have to basically be able to get your serum booster that I really hope you make and I'd squirted into a whole body solution because otherwise putting facial stuff on my butt. Well, it's kind of expensive that way. I mean I like my butt, but not that much.

Dr. Anurag Singh ([01:03:22](#)):

I hear you and well taken feedback and we'll be on it. Put

Dave Asprey ([01:03:27](#)):

Me in your beta test for it.

Dr. Anurag Singh ([01:03:28](#)):

Yeah, there you go.

Dave Asprey ([01:03:29](#)):

It'll be really

Dr. Anurag Singh ([01:03:30](#)):

Good. Done deal.

Dave Asprey ([01:03:31](#)):

Okay. We've talked a lot about just not losing muscle and how MIT can help with that. Before we come to the end of the show, what's next for weight loss? So we've got GLP one agonists, we've talked about them for longevity. We've talked about 'em for short-term weight loss and all the things you should do. If you were to put on your future hat as an expert in muscle biology, cell biology, give me the next two or three innovations that you would guess are going to happen.

Dr. Anurag Singh ([01:04:02](#)):

They're going to try to make the next generation GLP one drugs that have a muscle sparing effect that I'm sure they're on it right now. If you look, Eli Lilly just bought a discarded drug from Novartis for a couple of billion. That is a myostatin inhibitor drug. So basically the idea is that you can biologically, the

myostatin is a gene that controls muscle and anabolism and catabolism. So there's an idea that you can control and spare the effect of

Dave Asprey ([01:04:33](#)):

If you look at mice with myostatin amplifications, these are like bodybuilder mice. They're just ripped. And I think they've done it in cows too.

Dr. Anurag Singh ([01:04:42](#)):

Yeah, yeah, they've done that. But what they saw in the human trials just is that they ended up boosting mass by 5%, but the strength didn't really change. So there's an idea that you can now bring them back as part of that, oh, you lose 5% with pic, but maybe you take these. And so I think that's probably what you will see in the works. And then you'll see probably GLP drugs that have a much better safety profile. As you've mentioned, there's various GI effects, acute pancreatitis in some people nausea. Nausea is actually one of the biggest ones. And so they'll figure out a way. And then I think the combination of, I personally feel a mitochondrial energetic compound combined with the GLP one would be a big game changer for the field. So sort of not just muscle sparing, but muscle sparing plus the enhanced energetics of the muscle and on the metabolism effects would be a big deal.

Dave Asprey ([01:05:48](#)):

Yeah, I don't share that forecast. If a pharmaceutical company made something that enhanced mitochondrial function, the demand for all of their other products that treat the symptoms of mitochondrial decline would go down. So I feel like this is something for the supplement industry to handle versus the pharmaceutical industry will literally kill a drug that increases mitochondrial function unless they can give it for short term for \$10,000 a month for cancer or something. Otherwise it literally would remove the pharmaceutical industry as a player in your health, which frankly I love drugs. Drugs have saved my life a few times. Drugs are really useful. Antibiotics if you have a really bad infection, they literally will save your life. And some of the other things like Modafinil, I wouldn't have a degree from Wharton without a cognitive enhancing drug. It's okay. You just look at risk reward and you also have to look at motivations there. So I like the idea that you're promoting, but I think what's going to happen is they'll sell drugs that maybe you don't lose the muscle and you're going to have to keep selling medipure that people take alongside it.

Dr. Anurag Singh ([01:06:58](#)):

Yeah, I meant oppu like natural compounds that the pharma companies will wake up, that these are kind of companion products that they can possibly educate people and we'll have to find common ground with all the side effects. These, I mean statins, these are wonder drugs too in the past. And you know what statins do in muscle too? So this is a similar trajectory.

Dave Asprey ([01:07:25](#)):

It's funny that I think it's Eli Lilly or Merck, one of two has a patent for selling a statin with co-enzyme Q 10, which is a supplement that increases mitochondrial function. They don't sell the drug, they just patented it so no one else would. That's good. They know that they harm mitochondrial function. True. So it's funny, and we talked about myostatin as a way to maintain or grow muscle mass. Liz Perish was on the show, geez, a few years ago, pre pandemic, and she did gene therapy via a viral vector to increase myostatin in one of her legs and noticed a difference from it. And I, I've done other gene therapy for statin levels and I think that may be some of the future as well. These things via gene

therapy that's reversible. I know there are some doctors out there who genuinely think you can't extend human life and so well don't do gene therapy.

[\(01:08:27\)](#):

You can't win anyway. And I'm just not one of those doctors. In fact, I don't think that's a longevity approach. That's a pro-death approach. Masking is longevity. So I am just really blunt. I want to extend my life and I want to extend your life and I want to extend and expand your health, the entire duration of your life, even if it's 10 or 20 or 30 or in my case a hundred years longer than it's supposed to be, that's okay and maybe I won't make it, but to say it's impossible means you wouldn't consider gene therapy and in this case, I don't know if it's a drug or a gene therapy or a new peptide or whatever it's going to be, but your job is to maintain muscle mass no matter what as you age, that doesn't mean you need to exercise seven days a week.

[\(01:09:11\)](#):

In fact, over training as you age is a stressor on the body. And I see a lot of people in their fifties, a couple of guys over for dinner the other night, and they're both, I mean big shoulders. These are strong people who work out way more than I do, and they're just big pop bellies and they were looking at each other saying, we've never worked out this hard to be this fat. It is something that happens when you overtrain, your cortisol is high and as you age, so should they go on a GLP one drug? I mean if you lift all the time, you got lots of muscle, but you got a big belly. Are they candidates for these kinds of drugs?

Dr. Anurag Singh [\(01:09:51\)](#):

Good question. I think they would be because they would sort of focus on their diet and building their strength. So maybe they are. They are. But what we do know is that we're training uses mitochondrial dysfunction. So I think before I recommend Ozempic, I'll recommend MIT peer because I know that over-training induces inflammation and mitochondrial dysfunction. In fact, we just did a study where in elite Olympians we see that and MIT pure recovered the induced better muscle recovery and less inflammation. So actually, yeah, they should try MIT peer your friends.

Dave Asprey [\(01:10:25\)](#):

It's shocking how you can lose weight by exercising less and maintain muscle mass. And I've seen so many people I've worked with over the last 15 years who are genuinely like, I'm going to do this same way I was when I was in my early twos. I got to lose this weight and six days a week of working out and it's that cortisol thing and it's the stress and it's mitochondrial dysfunction. So one thing you could do is every other day lift on the other day, take a yoga class or a meditation class, and that'll probably help because then your mitochondria can recover or use an advanced technology to help your mitochondria recover. MIT Pure would be one of those because you've got the data and 10% better improvement. And you could do all the upgrade lab stuff that's around recovery. You could do all the biohacking stuff in all my books. Here's how to recover faster from any mitochondrial. I don't care if it's a bacterial toxin, I don't care if it's EMFs. I don't care if it's sleep disruption or a bad diet or whatever it is. Increased mitochondrial function, increased lifespan.

Dr. Anurag Singh [\(01:11:25\)](#):

200% agree.

Dave Asprey [\(01:11:27\)](#):

Sweet. It's always a pleasure to get a chance to talk with you, Dr. Singh. I think you're working on just a fascinating area and you're one of the small number of researchers who I think are going in the right direction, looking at cell biology as where we start instead of looking at an organ system or looking, the worst case is like epidemiology or, oh, I don't know. I believe that people live longer in this blue zone and I'll ignore that blue zone over there where they eat a lot more meat. And then I'll write a book that says, eat more beans without any mechanism of action whatsoever. I don't look at that as being highly scientific, even though it's very well-meaning I think looking at cell biology, and I don't care if it's garbanzo beans, I don't care if it's kale and I don't care if it's grassfed steak. Either it works or it doesn't and your mitochondria won't lie. And since mitochondria don't lie and mitochondria work better on MIT Pure, that's part of my stack. That's just how I'm going to do it.

Dr. Anurag Singh ([01:12:27](#)):

Perfect. Pleasure to always chat with you and talk about the emerging signs and to share that with your audience. Thanks for having me.

Dave Asprey ([01:12:35](#)):

You got it. And guys, whenever someone comes on the show to talk about something that they're involved with, I ask for a discount for you. [Timeline nutrition.com/dave](https://www.timeline-nutrition.com/dave). You get 10% off. I feel a difference in my brain and over time, seeing a difference in your mitochondrial function is important. And my ask for you is that if you are going to use any of the GLP drugs that you listen to this, you download the transcript or you send that DM to me on Instagram that says GLP one, and I will send you a document that tells you all this stuff just summarized for what to do to support yourself on GLP one. I think you should be taking timeline if you just want to live longer, but double down on that if you want to take any of the GLP one drugs because your mitochondria are the thing that keep you alive.

[\(01:13:30\)](#):

If they go, you go. Every degenerative disease is tied to poor mitochondrial function. Don't let that happen because Alzheimer's sucks. Heart disease sucks, cancer sucks. You don't have to do that, and so does diabetes. They're all mitochondrial illnesses. And here we have a broad spectrum supplement that goes at a low level to support all the systems in your body so they can do what they're supposed to do. So please consider that if you're on these expensive drugs. This is just a worthy addition given everything I know about biology. And again, it's [timeline nutrition.com/dave](https://www.timeline-nutrition.com/dave) and get 10% off.