



## Transcript of “Harsha Chigurupati”

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Speaker 1: Bulletproof Radio, a state of high performance.

Dave: Hey, it's Dave Asprey with Bulletproof Radio. Today's cool fact of the day is one that almost no one knows about. It's that the longest hangover on record is four weeks, which was set by, you would've guessed this, right? By a Scottish man. This is not a joke, he drank sixty pints of beer over four days, and he did not have the scientific knowledge that the bubblier the drink, the worse the hangover, because the gas causes your pyloric valve to open and the alcohol moves more quickly into your small intestine and bloodstream. The Scottish man's doctor confirmed this diagnosis. He probably got what was coming to him, but it is kind of a funny fact of the day.

If you've been listening for a while, you know that I'm not one to waste time. One of the things that makes you feel really good is to look good, and there's a bunch of research that says that when you look good, you feel good, and people treat you differently. You actually make more money, and you'll be more motivated. You can actually have more energy when you look good. One of the things that I've never particularly been a fan of is going out and shopping. I don't think I'm alone, as a guy. The Five Four Club provides a simple, affordable way to expand your wardrobe. It's a personalized member experience, and it's got dependable how-to-wear style suggestions, a curated collection selected by a personal stylist for you, free size exchanges, free delivery, and easy style profile edits, and there's exclusivity.

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Before we get going on the show, if you haven't ever had a chance to check out Bulletproof Unfair Advantage, you totally should check this stuff out. The reason is that this is the most important supplement that I've made in my career so far, and it comes in this package that's like Transformers, more than meets the eye. If you're watching the video on [bulletproofexec.com/youtube](http://bulletproofexec.com/youtube), you'd be able to see this stuff. It comes in little ampules. The reason you take it is that it's a whole body nootropic, or a performance enhancer. You have the most mitochondria in your brain, and we have a proprietary form of something called PQQ. We synthesized the stuff. It's not the form everyone else uses, it's called Active PQQ.

What it does is it promotes optimal nerve function, optimal heart function, and it boosts your mitochondrial performance. You have this amazing energy for a while after you take it without relying on any kind of stimulants or anything else like that. Since we're talking about alcohol today, and you're going to learn a lot about alcohol, Unfair Advantage is an amazing hangover hack. You get groggy and cranky that next morning, give yourself a little mitochondrial boost, you're amazed at what your brain can do. Head on over to [bulletproof.com](http://bulletproof.com). It's called Unfair Advantage, the world's first whole body broad spectrum nootropic. It'll absolutely kick your ass. It's amazing, and you can sleep on it just fine.

All right, enough about that stuff. Let's get into today's show, which is about alcohol. Today's guest is Harsha Chigurupati. I think I said his last name exactly perfectly, but I'm not entirely sure because that last T is a soft T, and saying a soft T isn't that natural for me because I always want to say "th", but I did my best. Harsha, welcome to the show.

Harsha: Thanks Dave. You did a pretty good job with the last name, and great segue from the product onto the topic of alcohol.

Dave: I'm happy to help. Harsha's on today because he's a pharmaceutical technology entrepreneur and he's running a research company called, funny enough, Chigurupati Technologies. His company is — this is a big, broad goal — aiding the evolution of mankind. The way he's doing that is, after eight years of research he's making a new category of alcoholic beverages called Functional Spirits. He's come up with a game changing liver-friendly alcohol using a molecule called NTX.

The definition of biohacking is changing the environment around you and inside of you so you have control of your own biology. That lets you do whatever you want to do. In this case, you wanted to drink something, you didn't want it to make you age more quickly, get more cancer, and basically trash your body. Well, maybe hacking the alcohol is the way to do it. That's going to be a fascinating episode. We're going to delve into what alcohol actually does and what you can do about it, then how you can take control of your alcohol before it takes control of you. How's that for a tagline?

Harsha: That's great, actually. Let me tell you, it's not very often somebody shares my thought of changing the environment around you as per what you see fit or as per your requirements versus adapting to the environment itself. That's exactly what Chigurupati Technologies does. The goal is to aid in the evolution of mankind, and we do that basically by focusing on R&D and coming up with technologies that essentially lets you do whatever you want to do without having to pay for it. It's like having your cake and eating it too. That's the technology we work on.

Dave: I'm a fan of mounting lasers in my forehead. I haven't quite got that yet, but I'm going to do it! Just kidding.

Harsha: One day.

Dave: We'll get there someday. Actually, I'm not even a fan of that to be perfectly honest. There's already lasers in my forehead. They're called mitochondria. They just don't shine that brightly except when I do certain things to them.

Harsha: Fair enough.

Dave: Of all the things you could've done, what made you go after NTX? What is this stuff?

Harsha: Okay. Do you drink alcohol, Dave?

- Dave: On very rare occasions. I find alcohol is not a performance enhancing substance. I have a whole infographic people can download where I talk about, "This alcohol has the least mitochondrial toxins in it, the least hangover effect, the most ... " I tend to do vodka or lately Dry Farm Wines. By the way, [bulletproofexec.com/wine](http://bulletproofexec.com/wine) has a cool thing, one penny for a bottle of mycotoxin-free wine. For the most part, if the wine's older than me, I'll take the hit. Otherwise, I don't really want to. That's kind of the general answer there.
- Harsha: All right, fair enough. Let's go back to why we decided to focus on alcohol as one of our first major projects. Listen, nobody in the history of this planet, I can tell you, woke up one day and said, "You know what? I feel like ruining my liver today. Let me go grab a drink." We all know we drink alcohol at the end of the day because of the positive attributes of it, which usually ends up being the relaxation factor or the buzz factor.
- Dave: Like to get laid, is that what I heard you say?
- Harsha: That's an extension. That's not what I said. I see it could be an extension of that, but the buzz factor, despite what you may say about the taste, classy drinking, whatever it is, it's really the buzz factor, the relaxation factor.
- Dave: Sure. It's a drug, right? It's a recreational substance.
- Harsha: That's usually what it is. Let's call it for what it is. We don't drink alcohol because we want to essentially mutilate our DNA or stress out our liver. These unfortunately were byproducts of enjoying the alcohol, and we thought for the last ten thousand years that it's just something we had to accept. The key came down to, "I want to be able to enjoy my alcohol without affecting my liver, so why not go after it?" This is possibly the most unevolved product in the entire world. Like I said, there's been no change for over ten thousand years. It's just ripe for the picking, going after this.
- Dave: It is indeed. I've looked at alcohol for a long time, and I'm like, "You know what?" I hit this point in college where I realized my favorite Friday night was a triple espresso and a six pack of whatever was cheap versus just a six pack of whatever was cheap, because it just made me want to go to sleep. Then I realized at a certain point that a triple shot of espresso actually made me happier than a six pack anyway, but that's bad for your sleep too. They're both some of nature's oldest recreational substances, along with tobacco. Those are the big three, and maybe ayahuasca is the other one if you want to go back to ancient history. It's probably ripe for the picking, I'd say.
- Harsha: All right, fair enough. Let's get into what NTX is. Long story short, NTX is a technology that essentially lets you enjoy alcohol without hurting your body.
- Dave: I'm going to challenge you on that one, because alcohol does lots of bad stuff to the body.
- Harsha: Okay, you know what? Fair enough. The concept of Functional Spirits was such, obviously NTX is not completely bulletproof but it does reduce it significantly, and we'll go into some of the data

as we move forward.

Dave: I'm all over harm reduction. Let's face it, people are going to drink. I don't think even with NTX that drinking is probably going to be the healthiest possible thing you could possibly do. My guess is that sitting in an ashram fasting might be healthier than drinking, but let's face it, you're not going to do it. It's Friday night and you're out with friends, so it's okay to drink. When you're going to do it, just know what you're doing and do it intelligently. I believe you've got some cool stuff there. Tell me what's in it, and what does it do.

Harsha: All right. Basically NTX is a blend of three ingredients: Glycyrrhizic acid, which is essentially extract from the licorice root, then there's mannitol and potassium sorbate. These are ingredients that are not really known, at least three of these ingredients together, to protect the liver. Yes, there's some data about licorice extract, et cetera. Of course, like you said, it's eight years of testing. What we've realized is after dozens and dozens of clinical trials, we've essentially been able to mix and match these three ingredients in certain proportions that actually helps it act synergistically together to protect the liver.

Dave: The potassium sorbate isn't a preservative, it's actually part of the effect on the liver?

Harsha: It actually is a part of it. A lot of people think it's just the first two ingredients, mannitol and glycyrrhizic acid, but no, potassium sorbate is actually a very important piece to the whole component.

Dave: Now, what normally happens when you drink alcohol in the liver is it depletes glutathione. One of the things I recommend is I make a glutathione thing. I'm like, "Look, if you're going to be drinking, maybe propping up glutathione before and after is just a good idea, and don't take Tylenol at the same time because that's a stupid idea." Basic stuff like that can help you not have a bad liver. Are you going beyond the glutathione effects? Are you looking at acetaldehyde? What's really going on in there?

Harsha: Just because you brought up Tylenol, let's keep that discussion for later, because there's a great story behind that. Let me focus on alcohol, how it basically works on the system, and what NTX does. As you had said, one of the issues is when alcohol is metabolized because of the free radicals in it, it depletes the glutathione. Taking a step back again, it's not really alcohol-alcohol that's really bad for the body, it's the metabolism of alcohol. Like you said, alcohol becomes acetaldehyde, then essentially it's metabolized into acetate, carbon dioxide, et cetera. During this process, just like any chemical reactions, unwanted byproducts, and here during the initial stages, the byproducts happen to be free radicals.

A lot of free radicals are generated, and as you and people listening would know, free radicals, what they basically do is, very unstable molecules, they go and they steal electrons wherever they can find. In the process, they end up making the molecules they steal the electrons from unstable. What happens is when the cell walls become unstable, the cell walls die, cytoplasm leaks out, causes cell death. That, on a massive level on the liver, is really why alcohol is bad for the liver.

Now, NTX has three main therapeutic activities that actually reduce the harm caused by alcohol metabolism on the liver. NTX has certain antioxidative properties. What that essentially does is, let's picturize free radicals as soldiers that are going to go and damage the liver cells. The antioxidants basically neutralize some of those free radicals from attacking the liver, so the first part is there's some protection going on. Then we also see that NTX has certain anti-inflammatory as well as immuno-modulative properties. What that basically does is it actually helps the liver, but we know the liver is the only organ that regenerates itself. It actually helps the liver regenerate even quicker than it would on its own.

Using these three therapeutic activities, we've seen in clinical trials that were done all over the world, actually — in India, in the US, et cetera — that overall, there was a protection of over ninety-three percent on the liver when you compared people drinking just a vodka versus a vodka made with NTX.

Dave: Now, how are you measuring harm reduction in the liver? What's the metric for liver protection?

Harsha: What basically happens is when you go to your doctor and he gives you LFTs, which is your liver function test, what he basically is looking for is ... They take your blood and they essentially are looking for certain enzymes and the levels of those enzymes in the bloodstream when your liver is under stress, because basically these cells break out, these enzymes leak out into the bloodstream. The higher the level of enzymes, the more under stress your liver is, and of course doctors and scientists have basically told us what the base level is when your liver's not under stress.

You look at certain enzymes like ALT, AST, GGT, ALP, just different enzymes, and when you look at the levels in the bloodstream, an elevated enzyme means liver being under the most stress.

Dave: Okay, so it's liver enzyme testing. Got it.

Harsha: That's one of the main ways.

Dave: I believe that. When you say vodka made with NTX, do you distill the vodka then you pour in some NTX and that's how it works?

Harsha: Yeah, that's basically what it is. The manufacturing process until the end ends up being the same. Now, this is made for all spirits that go from thirty-five to fifty-five percent alcohol by volume, and the strength they metabolize with versus something like beer or wine is a little different. Basically, after manufacturing, we add it in the final mixing stage in the quantity that we're supposed to do it at, and essentially we end up filling the bottles.

Dave: Why don't you just put it in a capsule and take it?

Harsha: Well, the way we developed NTX is we developed it specifically keeping a few limitations into account. First of all, let me put it this way, if you take a pill, there is a very good chance that you won't get the most optimized effect there is because some of these ... First of all, when you take

a pill, the timing of taking the pill versus NTX differentiates significantly. When you do that, the chances of misuse also increase. People certainly think, oh, they can take five, six pills and that delivery is completely bulletproof and that you can drink all the alcohol they wanted.

What we wanted basically was an optimized dosage which is consumed along with alcohol itself. For example, we talked about antioxidative properties. The way the alcohol is being metabolized right now, and the antioxidative properties of NTX enter right away, neutralizing it, things along those nature, make this more effective which is why the timing is extremely important, which is why it's always better if it's manufactured with the alcohol itself.

Dave: I hear you, there. That makes good sense. You're dealing with the aldehyde spike, or not? Do you measure acetaldehyde formation? This causes advanced glycation end products throughout the body when you drink alcohol. That's one of the reasons I was a little skeptical. You've got less harming the liver, but are you essentially aging tissues throughout the body when you drink still, or are you dealing with that effect as well?

Harsha: Well, the thing is, the sad part is we know acetaldehyde is a carcinogen, but at the same time, it is also what causes the buzz factor that we drink alcohol for.

Dave: It's part of it, right? There's a GABAB receptor thing that's going on.

Harsha: There's a significant portion of it, and the thing is we haven't really hit a level of sophistication where we can play around with it without affecting the buzz factor.

Dave: If you reduce the aldehyde spike that does cause tissue aging, but not liver harm now, then people don't enjoy it as much.

Harsha: Exactly. While we did focus on the liver as the end product, NTX has overall protective properties, but really it depends on which tissues we're talking about, which part of the body we're talking about to see what the protection actually is. For example, to take it further, we've always focused on the liver as is, but in our attempt to show ... A lot of people essentially react by saying, "Oh, my liver will only be hurt ten years down the line if I drink too much. You know what? Drinking alcohol is fine now." We were trying to educate them, showing that, "Listen, within fifteen minutes of drinking alcohol, your liver is under stress. Yes, it may not be damaged, because if you're looking at actual enzymes, elevated enzymes in the bloodstream, then it's already damaged.

We tried to look at different measurements, and what we came up with was a method to not only measure the oxidative stress levels ten-fifteen minutes after drinking, but also a way to show for DNA damage. We were also able to show protective effects of NTX fifteen minutes to two hours after drinking alcohol.

Dave: Cool. If you're preventing the DNA damage, that is real value. DNA damage isn't a hormetic stress. A hormetic stressor, for people listening, hormesis is the idea that what doesn't kill me makes me stronger. Some types of things, like liver stress is actually hormetic. An alcoholic who drinks all the time, they've trained their liver. Even though they're still causing harm, they've

trained their liver to be able to handle more toxin. They can drink a quart of vodka that would put me under, and they can handle it, but the DNA damage that happens isn't a beneficial hormetic stress. It's actually just bad for you. It's the same kind of stress that's caused by mycotoxins that also oftentimes ride along, especially in undistilled alcohols like beer or a lot of wines. That perspective though is pretty cool.

Harsha: Just adding to it, don't ask me why we were the first people in the world to know this. I actually was hoping there was more research already done, but sadly there isn't. Until last year, the shortest term study that was done happened to be one that was done in Spain, and they measured the DNA damage after a weekend of drinking and showed they were significant. That was a big deal at that point. We took it to the next level, again because we are trying to show the real impact of alcohol, and we actually showed that two hours after drinking, the DNA damage could increase as much as 300%.

Dave: Very interesting. This was your research?

Harsha: This is all our research that we did.

Dave: When people say, "Oh, I drink alcohol because it's good for me..."

Harsha: First of all, I don't know who says, "I drink alcohol because it's good for me."

Dave: Lots of people say it's going to stop Alzheimer's. You get some of the less evolved paleo guys, "Oh yeah, I drink a lot of red wine every day." It's like, whatever.

Harsha: I understand there's a lot of research around it. This is what I tell everybody I come across. I say, "Listen, if you don't drink alcohol, don't start. But if you are drinking alcohol, yeah, it's stupid to not drink anything but alcohol made with NTX because it's a functional spirit." That's what I tell people. Don't start drinking thinking it's better for you, but because you drink it anyway, find a safer way to drink it.

Dave: We're in agreement. The last interview I had with the guys from Dry Farm Wines, same thing. He's like, "Look, micro-dosing is a way to do this." It's okay to do things that are fun and pleasurable that aren't good for you. Just don't do things that are super bad for you that are just as pleasurable as things that are only a little bit bad for you. That's just common sense, and we don't teach that common sense in school. Certainly when I was going to UC Santa Barbara, which was voted one of the best party schools on the west coast, I don't even remember half of what I did there because I was drunk, but apparently I had fun.

Harsha: Welcome to the club, unfortunately. The whole idea of liver-friendly alcohol started junior year of college.

Dave: I was about to ask you that. How did you come up with this idea specifically?

Harsha: I was actually a very, very late bloomer. I had my first alcoholic beverage when I was twenty years old. Drank it, enjoyed it, and it just so happened that I started drinking when I was taking a

couple of classes in pharmacology. We were learning about neurotransmitters and pharmacology of neurons, and basically the first thing that came to my mind was, "Okay, I know there's definitely a way to mimic the effects of alcohol on the brain." It may not be alcohol, but you can mimic it with certain drugs or molecules that haven't necessarily been discovered yet. I don't want to stress out my liver or my DNA. At that point I didn't know about the DNA, it was the liver. Why not essentially be able to come up with this molecule that mimics the effects of alcohol and try to promote it as an alcoholic beverage, because it, like I said, mimics the same effects?

At that point though, I knew about the pharmaceutical industry because I grew up in the pharmaceutical industry my entire life. My parents own a pharmaceutical company. You couldn't have it as a drug. It would have to be as easily accessible as alcohol is for it to be successful, which means you basically go to either a liquor store or a supermarket and should be able to buy this drink. Now, to develop a safety profile, get over the regulatory requirements, et cetera, so that people can go to any store and buy a molecule like that which most probably might be a new molecule entity, god, it would be billions of dollars. I kind of let it go at that point.

Dave: You gave up on that and you came up with something, because the three ingredients you're using are all GRAS ingredients. GRAS, for people who aren't in the industry, Generally Recognized As Safe, which is an arbitrary designation from the FDA. Some GRAS ingredients are not safe and some are. If you're magically on this list, you can sell it without spending at least several million dollars on lab tests to show something that pharmacologically is obviously safe. Things like water would be generally regarded as safe, although you never know, they might take it off the list as soon as someone wants to sell it as a drug.

Harsha: Well, it's interesting you would say that, because a couple of years ago the FDA, working with the TTB, came up with a list of something that could be GRAS. Doesn't necessarily have to be GRAS in alcohol. They did that with caffeine. I know why they did it. Sometimes I understand it doesn't make sense, but listen, let's not talk about what's ethical, unethical, what's right or what's wrong. These are the rules we have in place, and that's the best guideline that we can work with, better or for worse.

Dave: It's the guideline that if you don't work with it, you go out of business. Even if it prevents you from doing the thing that's best for the world, you still work within it because otherwise you'll do nothing for the world.

Harsha: There you go.

Dave: At least in the US, that's how it is. The scary thing is that it's different in Canada, it's different in Europe, and it's different in every country. People who don't know this, I roast Bulletproof coffee outside London and we sell Brain Octane in the UK. It's called Upgraded Octane, because you can't have "brain" on a label in London. Whatever. I don't know why. I had to change the name of one of our major products, which by the way also affects alcohol in the liver. It's so interesting that you're dealing with the same thing, but because alcohol is even more regulated thanks to prohibition almost a hundred years ago, there's all sorts of weird things. When you



cross a border, who really cares if you have more than one bottle of wine or not, but they ask you, to this day. Who does this weird crap?

You're dealing with even worse regulations than a food company here, and you somehow got around the red tape. How did you do that?

Harsha: This is where the Tylenol story comes up to some extent, like we were talking about earlier. That also is a segue as to how I was able to use ingredients to come up with this concept instead of just going ahead with, for lack of a better term, a "synthelol" like you see in Star Trek and whatnot. I had this idea; I gave it up because, to be honest, I didn't know how to move forward on that, not to mention I don't have a couple of billion dollars that I could just spend hoping this would work out. My family's company actually is one of the largest manufacturers of acetaminophen in the world.

Dave: No way!

Harsha: Yeah. I think number two in the world.

Dave: Now I'm truly, truly amused. You're basically like the liver death merchants, I've got it. No, I'm just kidding.

Harsha: No, let me put it this way: The products we make are harmful for the liver to some extent; we're working on making it not harmful, protecting the liver.

Dave: I have to ask you this: Could you just, as an excipient, please include 500 mg of vitamin C and save tens of thousands of lives a year? It would be so easy.

Harsha: You and I are exactly on the same page here, and let me tell you why. We know this, acetaminophen does increase stress on the liver and as one of the larger manufacturers, my passion was always true innovation, not really business. I was never going to be great at buying something for a dollar and selling it for two. Innovation is what drove me.

Dave: It's more fun.

Harsha: It is more fun and more rewarding, and also there are many people who are just better than me at business, period. What I did is when I was working for my family's company, I actually set aside a team of scientists and we came up with a prototype of a liver-friendly acetaminophen.

Dave: That would be so game-changing.

Harsha: Yes, that's what I had thought too. Younger years, naïve.

Dave: I can see where this is going.

Harsha: There are two large brand owners of the acetaminophen drug in the world.



- Dave: We won't name any of them specifically.
- Harsha: We won't name anything. Went to the both of them, showed them this technology, and they looked into the science, everything. Amazing, science works. Answer was no. Why? Not necessarily that the science doesn't work. Number one, if you have to introduce a product with this technology, you number one are accepting in front of the whole world, "Yes, what I sold earlier was toxic for you. Potentially toxic for you." Secondly, it brings up a nightmare of litigation.
- Dave: The mycotoxin-free coffee category has similar characteristics. If you're a big coffee player, you don't want to talk about that in your coffee, even though in Europe it's regulated. In the US it's not, so we don't want to talk about it here.
- The FDA just changed what they're doing with Tylenol. They increased the risk warnings and all that stuff. Here's the thing, if you just added vitamin C without saying a word about it, just, "Oh, we thought it would lower our manufacturing costs by half a cent so we decided to do this," you would actually save so many lives without ever taking credit for it.
- Harsha: Yeah, but you need to understand, in the FDA regulations, the way it works is you just cannot take an over-the-counter drug and add something to it and sell it.
- Dave: You're right.
- Harsha: There's an innovator, you replicate the innovative brand as much as possible, period. It doesn't matter if you have even a better version of it, a smaller version, whatever it is. You replicate everything. You replicate the dissolution profile, you replicate the bioavailability profile, everything. You don't innovate, unless you're going to be a brand leader itself. To be a brand leader in the pharmaceutical arena, let's not talk about what that even requires.
- Dave: It's just the downside of pharmaceutical, and actually food regulation. Some of the stuff that I'm trying to do with food is really hard to do because of regulations. You want to put functional ingredients in a beverage? You know what that's like. "Sorry, it's not allowed to put ginkgo in a beverage because it's not generally regarded as safe in water." You can take a capsule with a glass of water, and that's generally regarded as safe. Who makes these rules? That's what we live with.
- Harsha: Listen, Dave, let me put it this way: I really had an increased appreciation for the FDA after I started dealing with the TTB.
- Dave: After you started what?
- Harsha: Dealing with the TTB. Essentially the FDA does not have oversight over alcohol in the United States.
- Dave: Ah, okay. FTB, French ... No, hold on, what is that?

Harsha: The agency is called the TTB, stands for Tobacco Taxation Alcohol Trade Bureau. They were a part of the ATF.

Dave: Oh, nice.

Harsha: They're the ones who regulate alcohol.

Dave: They've got guns and boots, got it.

Harsha: I think they were supposed to have guns and boots, I don't know if they still have them. One thing I can tell you about them is, trust me, you wish you were under the FDA once you start dealing with these people. FDA, for better or for worse, has certain scientific methodology to why they do things.

Dave: The intent is originally good, I give you that.

Harsha: The intent is good, but what I'm trying to say is there's at least some scientific basis. It's not that everything is just arbitrary. You come to the TTB, this is an agency that's basically declared a war on science.

Dave: I bet they love you after you said that.

Harsha: Trust me, they're going to hate me. We've been fighting with them for a year and a half at least now, god. We will go into that too, but again, I'm very good at veering people off topic.

Getting back to what made me and my team go after these ingredients for NTX. During this concept of a liver-friendly acetaminophen, I personally actually understood a little better about how the liver metabolizes everything, including acetaminophen, and -

Dave: It's fascinating.

Harsha: Exactly. At the end of the day, it's a depletion of certain enzymes that causes toxicity. Alcohol, to some extent, it's the same thing. Glutathione, like you said, is one of the examples. Given we were able to achieve something with acetaminophen, I actually put a team of scientists aside into my own company and I said, "Let's come up with a proof of concept." Essentially what we wanted to do was follow the same approach. We want to be able to come up with a liver-friendly alcohol that does not affect the buzz, which is the key at the end of the day, right? Everybody knows why you drink alcohol. If someone says, "Yeah, this is an alcohol that's better for you," but it does impact your buzz, you're not going to drink it.

We ended up researching ... We had a proof of concept established in about a year and a half to two years. Concept went to bond. it wasn't viable by any means. It wasn't stable, it tasted terrible, it had I think a red hue color, et cetera, but the proof of concept had been established. After that, we looked at the rules in America, because the US was the place where we always wanted to launch this technology. For me personally, this was really as much a home for me as India was. I always wanted the launch to be here, not to mention I went to college here.



Dave: There you go.

Harsha: There you go. I wanted the same bars to have our liver-friendly alcohol. Did that, and what we had realized was the TTB, the agency that's in charge of alcohol, does not let you put anything into alcohol, just anything into alcohol. There were a list of about sixty ingredients that were allowed to be added into alcohol, with the limits set, et cetera. What we essentially did was we looked at those sixty ingredients, we took about twenty-five to thirty ingredients out that we knew would absolutely not have any therapeutic value. The other thirty ingredients we didn't know had therapeutic value attached to it. We actually knew that they weren't any value, so what we did was we literally took these thirty, thirty-five ingredients that were leftover, and this is where the lack of amazing sophistication comes in. We just trial and errored everything.

Six years onward, we kept on trial erroring, trial and erroring, trial and erroring everything. Obviously dozens and dozens and dozens of studies, both ex vivo, in vivo. Around 2012 we came up with a combination of these three ingredients when mixed in a certain way, because even the strength matters there, had this amazing protective effects of alcohol on the liver.

Dave: Very cool. What does it taste like?

Harsha: One thing I had learned from my father, watching him, was you never, ever want to change the consumer experience, literally. If you ask a consumer who likes to sit down to stand up, the product's a failure as far as I'm concerned. What we did was we did everything possible to make sure that the consumer cannot tell the difference.

Dave: Okay, so it's very neutral.

Harsha: Yeah, so if you drink a vodka made with NTX, you really cannot tell the difference. Maybe there's a slight sweetness, but you can't tell the difference at all.

Dave: Okay, cool. Is it the same color?

Harsha: Everything is the same. It was made to essentially replace the existing alcohol industry. With NTX, basically what we've invented, obviously this protective effect, what we invented is a category called functional spirits. They're supposed to replace it without changing the consumer experience.

Dave: How did you get through the red tape to do that? You mentioned that you were dealing with even fighting this for a while. What was the path?

Harsha: This is what we did. By being able to use the ingredients that were already pre-approved by the TTB, we essentially had a formulation that was pre-approved before we even went there and asked for approval. Until 2012, a lot of them were animal trials, just because we found it very difficult, especially in Asia and North Africa where we thought the permissions would be easier, to do these studies on human beings. With animal studies we were thinking about what to do, and we finally were able to get a couple of CROs in the US that were willing to do human

studies, of course after ethical clearance, et cetera.

Once we had these results of human studies that were done in California actually, we took these results with approved formulas, approved COLAs basically. To give you a brief background, the way the approval process works for alcoholic beverages, you first get the formula approved in alcohol, then you get something called a COLA which is a Certificate of Label Approval. That means you show the TTB what the label is going to look like and then they approve it, and then you've got a completely approved product.

Dave: Because it's the government, and it's a beverage, they had to call it a COLA to avoid confusion. Got it.

Harsha: Of course. Obviously. We went to them and we asked for a meeting. We had an approved product, and against the advice of my TTB consultants ... It's this amazing technology that's supposed to make human life better. For the first time in history, we have the ability to drink alcohol without impacting our liver as much. We thought this agency would appreciate it. We went, we had our doctors from California fly over, we had our doctors from India fly over. No lawyers, because we wanted this to be open discussion. We went, three-hour discussion, we said, "Look at this amazing technology. This is what it does." After the two and a half hour meeting or so, they said, "Thank you very much for coming. Give us our permissions back."

Dave: Why did that happen?

Harsha: They didn't know what they were approving. As far as they knew, they were approving a flavored vodka. The first product that NTX was infused into was a vodka. It was approved, everything was fine, but once they heard this, they freaked out. Obviously when they realized we asked for a meeting, they did some research on this product. I think they were surprised anybody even asked them for a meeting. Anyway, they did that, and what they had told us was, "You know that thing that's called NTX on the bottle?" We were like, "Yes..." They said, "Well, that is going to cause a lot of confusion with the American consumer, so we want it back."

Dave: Because we're all so dumb, right?

Harsha: It's very paternalistic, right?

Dave: Yes.

Harsha: That's exactly what it is. When we said, "What are you talking about?" They said, "You know there's a drug called naltrexone in the marketplace, and unofficially there are some doctors who refer to it as NTX. We don't want the everyday consumer to think that you're putting naltrexone in a vodka," which makes absolutely no sense.

Dave: They call it LDN, anyone who uses it effectively. Come on. They shouldn't do that. Anyway...

Harsha: They did that, they used that as an excuse, and they basically bullied us until we gave the permissions back to them.



Dave: Wow.

Harsha: This is an agency that said, "We want it back." We said, "Okay, we'll talk about it." We got kicked out of the meeting basically, and they kept calling our distillers and our lawyers until they surrendered it.

Dave: Wow. Instead of just telling you to change the name?

Harsha: Yeah, they wouldn't even have it because we all know the issue isn't really the name at all.

Dave: Did you ever think of calling it TTB just for fun?

Harsha: Later, we actually did put one of those as a label. We did ZTX, we did TTB, we did the stupidest things possible. It was crazy, because we were completely shocked that there's this technology that evolves an entire industry, that they should be more than happy to ... The reason we took it to them was to first of all show the results, and say, "Listen, TTB, now that you know what this technology does, we want to actually work with you and word it carefully so it actually can communicate the benefits to the consumers but does not encourage them to binge on it." They wouldn't have any of it. They just took it off, they kicked us out.

Basically then we ended up having another meeting with them. We had requested it. We said, "Listen, we want to make sure we're on the same page again. We didn't want to make any health claims. We want to sell the product, yes, but we wanted to show you the science to show what this really does. Ninety-three percent reduction of stress on the liver. Think about what this means." They looked at us and they said, "Yeah, we will never evaluate a health statement for the product." Forget what the science says.

Dave: They just won't look at it, so you can't say it. Welcome to free speech, right?

Harsha: You will see that in the next few weeks, we actually have a petition against them on the basis of free speech, because they actually are censoring free speech with absolutely no basis whatsoever.

Dave: Even if they have a basis, either there is free speech or there isn't. One of the more shocking statements that I've experienced at Bulletproof was a regulator said flat out, "You are not allowed to say something absolutely truthful supported by a dozen studies," about one of my products. "You're not allowed to say that." I said, "But it's abundantly truthful. It's very obvious." He said, "Yes, but you are no longer in the era of free speech. You are in the era of controlled speech." This is an exact quote. I'm like, I didn't even know what to say. Where I'm from, you actually say things as they are.

To this day, I have several people who work for Bulletproof, and we're still a really small company, and I put most of my effort into making really good stuff and then interviewing people like you and writing books and sharing knowledge, but there are two and a half headcount at Bulletproof dedicated to making sure that we do everything right from a regulatory perspective.

We do a good job on it, because it's part of being a successful company in this space, but the cost of doing that is very meaningful. It means that when you buy something at the store, a meaningful percentage of every dollar that you spend on food went into this speech bubble process.

Everything you read on the label of every product that you read has gone through multiple levels of censorship to the point that oftentimes you see meaningless statements on labels, like supports a healthy something. What they actually wanted to say was, "There are four thousand research studies that says that this is good for you in this specific way, but we're afraid to say that because we might get put out of business arbitrarily." It's an untenable circumstance. It increases food costs and alcohol costs dramatically for everyone, and it's totally invisible unless you're in the industry. It's pretty screwed up, actually.

Harsha: Increasing costs, let's not even go there. At this point, things have gotten so ridiculous that just the legal costs of being able to keep this struggle going, I think we would have at least spent twenty-five to thirty percent of our entire ten year budget on just legal expenses.

Dave: My god. What was the development cost, if that's public? Have you spent millions and millions of dollars on this stuff?

Harsha: Tens and tens and tens of millions of dollars.

Dave: Wow.

Harsha: You need to understand -

Dave: By the way, no startup on earth would have been able to do that. You did this because you're working with large pharmaceutical assets behind you, right?

Harsha: Well, yeah, I was able to put them into Chigurupati Technologies, essentially. What it came down to was, you're right, no startup does it and it's actually stupid to do it, now in hindsight. When we originally started this in late 2005, early 2006, we budgeted like five million dollars or something. We said, "Okay, we'll get done," and then it's over quintupled, more than that since then. It'd ridiculous. I would say there was quite a bit of naivete that got us to this level, really.

The thing is, the reason it really ended up being as expensive as it is is because, you know this, human clinical trials, proper ones with just ten subjects for example, goes north of like two million dollars. You're talking about ten years of doing this, you're talking about with dozens of human subjects, dozens of tests. It gets ridiculous. Because of my learning personally from the multi-national pharmaceutical companies, I had learned that if something was going to be truly, truly disruptive, you're going to get shut down right away.

Dave: It seems to be the case.

Harsha: That's what I had learned. What we did was we had to make this process as bulletproof as possible, leave absolutely no chink in the armor at all. We developd this in the same way any

sophisticated pharmaceutical company would develop a drug. Say what you will about the pharmaceutical industry, about what drives their actions, they do have the best scientific protocols on the planet.

Dave: When they follow them. We have things like fen-phen where, like, oops.

Harsha: That's why I said, forget the intentions, forget everything else. We are talking about the integrity of the technology itself.

Dave: Agreed. When they follow their own rules, it works. I'll give you that.

Harsha: It is amazing. Listen, when they say they don't know something, they know it. You know this, I know this.

Dave: Right.

Harsha: Because of that, the early stage, first year and a half, we basically did the pilot studies, then we went into ex vivo, in vivo. We basically did a bunch of animal trials, phase one, phase two, phase three, then we came out to humans, et cetera. As the company was doing this, you know the cost of developing new drugs. They're billions of dollars. Because we didn't do it for a drug with unknown toxicities but for natural ingredients and we just wanted to prove the therapeutic value of this product, I guess we can say we kind of got away a little lucky in terms of the budget aspect of things, but it was still pretty ridiculous.

Like I said, this technology was made to replace an entire industry. That's a 1.2 trillion dollar industry. You have to do -

Dave: It's not even to replace it. You're still making alcohol, you're just adding this ingredient to make the industry more effective, to be honest.

Harsha: I agree with you, but then a lot of people who don't have the technology will say it's replacing it, it's a completely brand new category, and they'll try to kick us out accordingly.

Dave: It's a new category, sure, but new categories are the nature of disruption. The big guys, they're going to say you're lying, they're going to fight with you, and eventually they'll say it was obvious and they've always done it.

Harsha: Who knows where this is going to go.

Dave: If you've read history, likely that's what happens.

Harsha: Let me put it this way, you're right, it's not replacing an entire industry, it's an evolution of an industry. Just like when cars came along, there were still in the transportation business just like horse carriages, but they were an evolution. You're right, we're still in the alcohol business, but functional spirits is an evolution. Basically what it means is you should be able to drink without hurting your body. We're in the initial stages. It's not bulletproof yet, but we'll get there.

- Dave: I love that you're doing that, and I really appreciate the story of how you ended up taking pharmaceutical techniques and frankly pharmaceutical levels of funding to solve a problem that isn't that hard to solve on paper biochemically, but to actually solve it legally and regulatorily to the point you can say what it does. What's the status of this now? People listening to this are probably going, "All right, how do I drink some of this?" In fact, I would say this audience, people listening right now, are probably some of the more enlightened alcohol consumers out there. Look, we acknowledge we want to perform well, we acknowledge that, yeah, we're going to have fun, but we don't want to pay the cost of having fun if we don't have to. Can you buy this now? I know you're working with Bellion Vodka is this what's going on?
- Harsha: La la la la la! I'm not listening to you. I'm not listening to you. Let me tell you why. By the way, the TTB essentially went out and put a blanket ban on us talking about NTX, period. Forget if they constitutionally have the ability to or not. I am able to talk to you as the founder of Chigurupati Technologies and NTX because it's NTX and I'm protected by free speech, and NTX is not commercially available in the United States. If I ever mention a product that has NTX in it, I'm no longer protected by free speech and it becomes commercial speech. That's how they get you.
- Dave: Oh, I understand. We will not, at least you will not say any words -
- Harsha: I will not say it.
- Dave: - about anyone like Bellion Vodka, who is selling NTX products. I understand that you have no idea whether anyone even does sell it, right?
- Harsha: Well, okay, we supply the product and the technology so we know people sell it in the United States. I can also -
- Dave: What? No, no, they can't possibly! Google does not exist. The people who Google NTX and alcohol, I have no idea what they'll find. I'm totally with you, Harsha.
- Harsha: Wait a minute, Google? What's that, Google?
- Dave: It's funny. Likewise, you should never Google what the ingredients in Brain Octane do when you drink them with alcohol. You just don't want to do that.
- Harsha: It's crazy. The whole bureaucracy of it is just ridiculous. Yes, products made with NTX are available in the United States. I believe the company will be rolling it out all over the nation this year, but I think they're available right now in about five states, Massachusetts being one of them. I'm only definitely sure of Massachusetts because one of my goals, I touched on this before, was to get the vodka made with NTX into the same liquor stores that I used to buy my alcohol from in Boston when I was in college.
- There's this place called Blanchards that every kid who goes to Boston University buys their alcohol at, and one of my first goals was to go, and I saw it there. That was a good day.



Dave: That's awesome.

Harsha: When I was in college, that's what I wanted.

Dave: Now, when people drink this, do they get a hangover the next day?

Harsha: The concept of functional spirits, yes, is developed to take away all the negative aspects of drinking alcohol, which would be hangover. This current version of NTX, we focused completely on the liver, and of course because it works on a micro-cellular level, the DNA. What we wanted to focus on was, number one, making sure all that was protected, that people's bodies were protected, before we came up with anything that had to do with hangover because then you didn't want to be in a position, and it's also unethical, that people were drinking more because they wouldn't get a hangover, but hurting their bodies. It is something we are working on. I'm happy to say we have the product. We are finishing some clinical trials on it. It will be out in a couple of years.

Dave: I can tell you for the last fifteen years I've seen companies over and over come and go, and they call themselves harm reduction. Pills you can take for after partying, and pills you can take for after taking ecstasy, and pills for after all sorts of drugs and alcohol, and none of the companies ever go very far because people generally don't like to acknowledge the fact that they are harming themselves when they do something that fun. I'm working to break that thing that says, "Look, most things you do probably aren't that good for you."

If you just have a spectrum and you know what you're doing, and you know how good it is for you, how pleasurable it is and how harmful it is, and the mechanism of harm, then you can choose. You can dial in where you're going to be. I think that we're finally making headway there, where there is a market for people who say, "Yeah, I'm going to drink. I want to feel good, I don't want to feel bad." Instead of being like, "I'm tough enough to take the hit," it's like, "Actually, I'm enlightened enough that I just don't want to take the hit. I'm sure I could take it, but why would I?" It's that mindset change is what enables this kind of disruption in the market.

Harsha: You asked me earlier about why we didn't just make it in a pill. I told you the technological reasons why we didn't do it. The other aspect also has to do with the consumer experience. Again, one of our goals at Chigurupati Technologies is, like I said, to evolve mankind. That means that the product should be available for mainstream use, for everybody, and it should not change their habits. If you tell a consumer, you try to first of all explain to him the kind of harm alcohol can cause on the liver and then you say, "Here, take this pill before doing it," he is not going to do it. Which is why we put it in the alcohol itself. Whether he wants to or not, when he drinks the alcohol, he is already being protected.

Dave: I hear what you're saying there. This is a fascinating story, and I know that people who are listening can easily and quickly Google NTX and alcohol and figure out exactly where they can go out and get this stuff. In fact I might even be able to, because, hey, I have no business relationship with you whatsoever, so I'm allowed to say whatever the hell I want. I'll put some links in the show notes to where people can find this kind of stuff, which is really cool.

I'm still going to say drinking isn't a health benefit. It just isn't. However, if you were going to drink, having some of this stuff in there sounds like a good idea. Having any of the compounds that protect you from these things, including a little bit of vitamin C and all the other stuff that are on the Bulletproof Alcohol Roadmap, and I'll put a link to that in the show notes too. Any of that stuff is going to help. Sure, if you're going to party, just reduce what it does to your body. Have a good time. There's such a good argument for that.

Harsha: The key there being if you don't drink alcohol, don't drink. That's just stupid. If you're drinking alcohol, yes, you should drink functional spirits, basically.

Dave: There's no reason to start. Although, actually there is a reason. It's one of those things, it's like having a really good cheesecake. There's bad stuff in cheesecake, but there's a pleasurable thing. There's value in pleasure, and it's not like a guilty value, either. If you have an occasional small amount of alcohol because you like it or because you learn to like it, or because you want to try it, I don't have a problem with that. If you're doing a glass of red wine every night because you think it's going to make you live longer, you're doing it wrong.

Harsha: Exactly. The thing is, it's fine to drink a little alcohol every so often. It's completely fine if you enjoy it, and it's a social lubricant. There are many ways to derive pleasure and alcohol is not the only way, which is why I wouldn't say, "Oh, you want to derive pleasure in this fashion? Go drink alcohol." No. If it's what you already do and you like it, yeah, don't change your lifestyle, just do this in a safer way.

Dave: You're advocating porn, is that what I heard?

Harsha: Is that how you heard it, Dave?

Dave: There you go, turn it right back on me. Totally kidding. You're right, there are many ways to derive pleasure, and many of them are not all wholesome. We'll put it that way, but it's kind of funny. I appreciate what you're doing with this, and I support you in your fight to be able to state what your technology does.

Harsha: We're calling it a fight to evolve, because evolving an industry and being able to control our environment, not having to be a servant to what people call nature, is a part of evolution, technological evolution. The TTB has been trying to block it, and we're going to fight, and we are going to win at the end of the day. You said something earlier about us not being able to talk about the brand that has it, et cetera. It's just sad and really unethical that we have a technology that protects, and we can't talk about it.

I get it, there are people out there who make novel claims that are complete BS, and your agencies have to be there to protect consumers from it. I get that, but when you develop a product in all the right ways, in the most pessimistic manner possible — pessimistic meaning people are going to try to come after you so you have to make sure it's completely bulletproof — and they block you from completely saying it, it's just terrible. That's the reason we haven't relented yet, because we've actually earned the right to be able to educate consumers on the

harms of alcohol and why this is the better way to do it. We actually are the first of its kind in the world, I get that. We actually are filing the world's first health petition for an alcohol beverage, which is never been even heard of, in America next week.

Dave: I'll post a link to that on Facebook and see if we can get some attention for you guys.

Harsha: That would be great.

Dave: We're out of time on the show, but I want to ask you the question I've asked every guest on the show except episode seventy-something, where I forgot one time. Not enough coffee that day, obviously. If someone came to you tomorrow, Harsha, and they said, "Look, I want to perform better at every single thing I do in life. What are the three most important things I need to know?" What would tell them?

Harsha: Oh my god. I wouldn't even know how to answer that. The most important thing, obviously, is to understand how everything in the body works. First of all, get what the base level is, how the pharmacokinetics of something actually is. Once you understand that, you can start improving upon it. First, understand the baseline, and then understand what the markers are to even get started on the process of improving them, whatever it may be. I always go back to biology, the body, and that's what I'm talking about, but anything, really. If you want to improve upon something, first decide what the base level is that you're at, what are the different markers you have to measure to know if you're doing better or worse, and then get a strategy in place and go ahead and achieve it.

Dave: All right, that was one.

Harsha: Oh, okay great, thank you. I'm going to stick to one. I don't know, it's just a very, very open answer. All I can say is one thing that's definitely worked for me is complete, unwavering focus, and I like to compare it to a horse with blinders. Know what your goal is and keep going towards it. Opportunities are always coming along. Ignore them, because if you keep jumping to opportunities, you never get your goal in place. Also, if you're looking at opportunities, you are letting, again, nature or the macro-environment kind of tell you what to do, whereas if you already have a goal and you're going to go after that, no matter what, you're creating your own opportunity.

Dave: Beautiful. That was two. I'm enjoying this.

Harsha: You know what? Be naïve and stupid. Be very naïve into thinking that you can actually achieve something real in this world. As you go down the path, you will realize how much more difficult it is, but the fact that you're started and you're already into it just makes it harder for you to retreat.

Dave: Got it. A little bit of strategic naïvete is a good thing.

Harsha: I've definitely answered this question in the most unelegant, non-direct way possible.

- Dave: I think you did really well. First you did the MBA answer, which is define something, measure your goals. That was the smart kind of thing. Then you're like you've got have focus. All right, that's a good answer there. The third one is an answer I haven't heard before, but it's a good one. Just be a little bit -
- Harsha: Naïve and arrogant.
- Dave: You said stupid and naïve, but you meant almost just like willing to do something big, something that no one thinks is possible, which actually isn't stupid. It's courageous, the way I see it.
- Harsha: To-mah-to, tomato, potato, po-tah-to. Yeah, I call it arrogance, you call it confidence, but it all ends being the same thing at the end of the day. It's just a label.
- Dave: One of my favorite guys on the planet is Peter Diamandis. I'm fortunate to be friends with him and to get occasional time to just hang out and talk, and this is a guy who's like, "Yeah, private space travel, we should do that. Yeah, mining asteroids, we should do that." Dude, that's so cool! Same thing, people thought he was nuts for ten years, and now he's doing it.
- Harsha: That's amazing.
- Dave: That sort of thing, it is required to do the big disruptions, so kudos for your answer. Thank you.
- Harsha: Thank you very much for that.
- Dave: For listeners who want to learn more about what you're doing, is there anywhere besides Google for NTX that they should go?
- Harsha: All I can say is follow very, very closely the health petition that's going to be filed in DC on April 13th. The petition, we intend to completely put it all on the table where we talk about exactly how NTX works on the body, the benefits of it, et cetera. I'm told that the petition we're filing is going to be one feet thick, and it's going to be a press conference. Everyone's going to be there. If you follow it, I believe you would have access to enough science out there.
- Dave: Be sure to send me a link to that when the petition goes out and I'll put it up on social media, because I think Bulletproof Radio listeners and people who follow us on Facebook and Instagram and everywhere else, they'll be genuinely interested in this sort of thing and the ability for any company or any person to talk about science in the context of what they do for a living. I think it's meaningful, and I wish you luck in your work there. That's really cool.
- Harsha: Thanks a lot, Dave. Always good to hear someone who is a protagonist of technological evolution. Hey, at the end of the day, evolution always wins, so it's a hurdle we'll get over.
- Dave: It does indeed. Thanks Harsha. Have a beautiful day.
- Harsha: Thank you so much. You too. Bye-bye.



Dave: If you enjoyed today's episode, you know what to do. Head on over to [Bulletproof.com](https://bulletproof.com) and resubscribe for your Bulletproof Coffee packet, or go on over to iTunes and say, "Hey, I enjoyed this show a lot," and send it to a friend or give us a good rating. Do something to give back. I totally appreciate that. While you're at it, if you're going to drink, head on over to Google and look around, and see where you can find alcohol that contains NTX, which is this new ingredient that could make the alcohol a better choice than plain alcohol. We'll also include links to all this stuff in the transcripts here, and I'd also encourage you to look at the Bulletproof Alcohol Roadmap. It's entirely free. You can download it, and it talks about alcohols that are lower in toxins and higher in toxins, and things you can do to mitigate the effects. I think I'll have to upgrade that stuff to talk about NTX.

Have an awesome day.