Introduction and Guest Background

Well hello everybody. Welcome to this is another really great, really, really great, really exciting chance for me to interview somebody you should know about.

You should follow, you should read, and you should learn from as I have. She teaches me a lot. This is Monika Agarwal, MD. She is one of the people I'm interviewing who is a cardiologist, which is a joy since this is reversing heart disease.

Naturally. Summit, she trained in internal medicine at Tufts University in Boston, very prestigious in cardiology, fellow at University of Maryland in Baltimore.

But she's smart. She's in the sunshine now in the Orlando area as part of the University of Florida and director of integrative and preventive, cardiology.

So how are you, doctor? Hey. That's good. I'm good. Thanks for having me on your show. Good. You're good. Well, you are really, you know, so special. One, you are plant based, so we know you're smart.

Do you know you're really an advanced cardiologist with certifications in lipid management, echocardiography, nuclear cardiology, Cardiology itself. I mean, so you're the real deal.

I mean, not everybody I get to interview has to make patient decisions. I always like, when we got some clinicians on here that are in the trenches and you've got your own interesting story.

I mean, my story was I went vegan at age 17, and, here I am. But your story was a little bit more in the medical perils side. So tell us what happened when you were, you know, having and raising children to your own personal health and how that impacted your medical career.

Yeah, sure. So I thanks, Joel. For the accolades. I sometimes look at them and I definitely feel like a little bit of an imposter, I think. Did I do those things?

I think that's something that we as women often feel, and maybe we as physicians, I don't know, but I definitely go through this phase of thinking, you know, who is that person?

So I appreciate it. So, yeah, you know, I, I am 15 years out from my training, and so I'm old now, which is crazy. I, I've definitely gone through the phase where people no longer say, oh, you're too young to be a doctor now.

And now no one says that to me. But when I had my third kid, right after a few months, after I had her, my body started breaking down. And it broke down sort of very quickly within a few weeks.

So was four months postpartum or four and a half months postpartum. And I just started manifesting migratory joint pain. It was a shell, a shoulder. It was a knee.

It was actually I remember in particular, your fingers and the fingers are quite impressive. Anybody who really has had joint pain in their fingers, it's something like nothing else.

It's not like an ankle or a big, large joint in a finger. There's so little space for that. Swelling is exquisitely tender and red. And I remember those feelings.

I remember that there was, like glass cutting my feet, because. And I kept changing my shoes. So, over a, after fighting it and denying it for several weeks, maybe up to a month, if month and a half, maybe even that.

I ignored it.

Postpartum Rheumatoid Arthritis Diagnosis

I finally went to see my friend who's an internist who checked my inflammatory markers, which were through the roof. And then after that went and saw a rheumatologist and was diagnosed with an aggressive form of rheumatoid arthritis.

Wow. So they're being offered biologics and all kinds of standard pharmaceutical approaches to rheumatoid arthritis. Tell us about how your journey, you know, unfolded.

Well, you know, I'm kind of a stubborn person, and, and I didn't want to see anybody. And when it took a while before I finally accepted that I needed to find somebody that knew something about rheumatology.

You know, as a cardiologist, you don't really know that much about room. But boy, did I learn fast. So I went to see the chief of cardiology, at a major, prestigious institution in Baltimore.

And, was told basically that I had an incurable disease. I'd be on medications for life, and, that I needed to start medicine now, like today. And, you know, that's a very.

I hope I never speak to somebody the way I was spoken to that day. And, it was like the hardest thing. There's nothing like that feeling a feeling like there's no hope in that. You.

It's really, you know, that you've got this illness and it's yours for life, and that's it. And and maybe, maybe I needed to hear that. And maybe that was the only way I needed to that I would change.

I don't know, but, yes, I was given methotrexate. I was given, steroids. And it was a tough course. I was nursing my kid, and I was told, I need to stop that today, and that they felt like if I didn't get started immediately, that they thought that my numbers were so bad and I was so inflamed that, that I wouldn't have a good outcome, so I did.

I stopped everything and it's still hard to talk about it, but I stopped nursing, and, I got on the medicines and I got better. And so the medicines work, and I encourage people when they're massively inflamed to take medication because you have to get the inflammation under control.

And these medications are pretty incredible. But do we need them as quickly? Do we need them as aggressively? Do we need them for life? I think those are the pieces that of the puzzle that rheumatologists didn't figure out or haven't figured out.

And only in the last maybe 15 years since I've had this have I seen the sort of that a lot of rheumatologists have shifted away from that saying of like, this is a lifelong thing. You need to get on things immediately.

And we realize that there isn't a little bit more flexibility in this illness than I was told 15 years ago, which is good. Now, where in your personal health journey did plant based eating come on board before you got ill or that was part of your healing journey?

Yeah. So, you know, I was already vegetarian. I was a preventive cardiologist already, but I, I ate a load of dairy. And so I believe probably more ethically than health wise, but also health wise, that you shouldn't eat animals.

And then so, but I, I eat a lot of dairy and I eat eggs, but mostly dairy I think is such a pro-inflammatory, it's so pro-inflammatory. So, you know, whatever you think about eggs and I have mixed feelings about them, but with dairy, I'm pretty adamant that it's inflammatory.

At least certainly for me. And so I think probably nine months into my health journey, feeling pretty good back on, on medication, I mean, certainly on medications, but feeling back to myself besides the side effects, which were kind of rough.

Besides that, I felt like I was okay, but I, I struggled with understanding that I had an incurable disease and if it could be turned on. And so this is when I started to try to understand the genetics, because if you have a gene and it's silent and something activates a post post post-pregnancy, all the hormonal changes, stress.

I was, you know, studied, you know, three kids under four. I was running around like I was a full time cardiologist. Or, was it the stress? Was that the poor diet, was it the hormonal changes?

Was it everything? Probably, you know, was probably all of those things that triggered this gene to turn on. So is there a way then, that you could turn it off?

Or maybe you never get rid of it, but maybe you can quiet it, right? You could cause quiescence of that gene. And so that's what I continue to start. I started studying and reading about, and I started learning about nutrition, and I went and spent some time with a dear person who I really believe in, which is Elisa Fasano.

And Fasano was at Mass General, and I spent some time with him. And, you know, he is he has made his career in celiac disease and I think that he is so fantastic.

I spent a lot of time talking to him about his sister, interestingly died of rheumatoid arthritis complications and, so I spent a lot of time with him, and he taught me a lot about the leaky gut and about the way you can trigger leaky gut, which made me trigger me back to diet and nutrition.

So and, you know, I had a really good member of my team at the time who also helped me and taught me about nutrition. So I ironically, you know, I was, I don't know, eight years out from training or five years out from training already at that point.

And I was still learning. I'm still learning, and I was still learning about nutrition, which is sad that, you know, I can go through a whole fellowship, residency, medical school and not know anything about nutrition.

And it took until I got sick to learn about it. So at the present time, how old's your youngest in that you still got three children? How old is your third? Yeah.

So the little is 13 now.

Plant-Based Diet and Healing Journey

Okay. So she so I have a now a 13, 15 and a 17 years old. So I told you I'm old now, so I can't even believe it, but, Yeah, it's. My oldest son is 40, so you get a small tear for me, but not a big tear.

And if we did biomarkers, if we did a rheumatoid factor, as I said, right on, you, which are common blood tests for patients with rheumatoid arthritis, how would they, report.

Yeah. I mean, so this is the interesting part. So my rheumatoid factor in my anti CCP antibody are always high. They I haven't had them checked probably in a year or two, but maybe two years ago they continue to be high.

And so I would reach out to Fasano and say you know do you think that we can ever make those numbers go down? And he said he wasn't sure. I don't think we fully understand that piece, but the those markers are elevated.

But my inflammatory markers have been flat. You know, they they remain flat. I did have, post-Covid, reactive arthritis. That hit me pretty hard. And, that took months to, resolve.

And my inflammatory markers shot back up because until I got Covid, I thought that maybe I had cured myself of this illness. But I learned after Covid that I had not, and that I still have the ability to trigger inflammation, but.

And so that's why I sort of constant, ongoing, meticulous care is key. And I do believe that at some point we will understand if these genes can be like my rheumatoid factor eventually or my entire CCP and I, I want to believe

that they can go down.

But they have they fluctuate up and down, to date. Interesting. And have you now that you, I assume, have eliminated all dairy products and eat a whole foods plant based diet, do you do anything special, any particular, you know, anti-inflammatory foods or spices?

Are you pounding down tumeric? You know, more than the average person might? Yeah. So, you know, I changed everything. I was sleeping too little. I was exercising more than I should, because that's, you know who I am.

I'm compulsive. And so I used to run too much. I would trigger, you know, and I. I didn't know how to rest. And so I had to learn how to rest. And so I spent a lot of time learning how to slow down, which, you know, I go back and forth of being good at, I changed everything about my diet.

So even though I was vegetarian, I wasn't a healthy vegetarian. I ate loads of cheese sticks. I ate processed foods. You know, my gut was sick. And so I had to really learn about the role of fiber and the importance of, anti-inflammatory foods.

So do I eat anything in particular? Yeah. I mean, I eat a lot of turmeric, but you have to be real careful with turmeric. And people who eat in pill form.

It can affect your liver enzymes. It can cause heartburn. And so sometimes I overdo it and then I have to cut back. I eat omega three fatty acids. I eat a load of anti-inflammatory foods like chia seeds and flax seeds on a regular.

But mostly I'm most aware of my fiber intake. Because I do think that your healthy gut bugs are impacted by the amount of fiber you take in. And when I have those healthier bugs, I think that there's probably a, there's a connection that's loosely been discussed about how healthier bugs prevent more, prevent that leaky gut.

More so if I can connect all those. I think that key is really keeping my gut healthy in love. Butyric acid, I assume. So, of course, for sure. Any any acids?

I'll just tell you a quick anecdote. I had the pleasure of lecturing in integrative medicine meeting about ten years ago in Los Angeles. And the name you brought up, which I think the audience won't know.

Alessio Fasano as a as a OMD at Harvard, world renowned expert on leaky gut and the molecule called Zawinul. And so we we lecture and with some other people and then we had dinner and it was David Perlmutter, author of, Grain Brain.

It was Bill Davis, author of Wheat Belly. Doctor Fasano and me and everybody expected that when two of the world's anti gluten experts at dinner and Doctor Voss and I wouldn't reach for the breadbasket, but it was an Italian restaurant.

And I have no rules about gluten. It doesn't affect me. So I had a piece of good Italian farm bread. But Doctor Fasano did too. I ended up writing a a blog about it, and I've gotten grief from it all over the world. And there's no way he ate a piece of bread.

And he told me he goes and is Italian and he goes, yeah, I get ten minutes of inflammation in my gut and it goes away. But I've done this my whole life and other people shouldn't.

But, that little anecdote, so. I'm not sure that he says, though, that you shouldn't I'm not sure that he says that you shouldn't have grains or gluten, and it's really the people that are sensitive or.

Right, or have the genetic predisposition that really have to be restricted. And most of us, I think, can eat grains without difficulty being part of it is the grains that we eat are so bad, right?

I mean, there's so much processing chemicals, pesticides that we're seeing in our grains that I think are triggering,

problems. But, on top of, you know, whether you have a gluten sensitivity or not.

But I'm not sure that, you know, I, I, that I don't, I don't restrict my gluten and I eat, but I eat very clean breads, too. Now, not everybody can eat gluten, and I.

And about 7% of the population is gluten sensitive and about 3% is gluten intolerant or has celiac disease. And so those people really should be so mindful.

And finding your triggers for disease are really key because you may have a trigger from gluten, but for many people I think that think they're gluten sensitive.

It may not be gluten sensitivity maybe. I'm not saying that people are wrong. It's just that, I think there's more to the story. I think there's more.

There's more problems in some of the wheat in the breads we're eating, too, which are triggering a lot of the problems. Right. And then, you know, you certainly hear a lot on social media, YouTube, Twitter.

I'm not saying the academic world that maybe it's all inflammation causing atherosclerosis. Gardner. Disease and maybe cholesterol and LDL cholesterol have nothing to do with it.

And it's an extreme view, but it's a very popular view. You're an expert. You wrote a book that came out in 2020 called Body on Fire. I'll. Inflammation triggers chronic illness and the tools we have to fight back.

So what's your view on that balance in the world of cardiology? The topic of this summit, the topic of your specialty and mine, and the role of inflammation, is it more important than lipid disorders?

Is it just another factor amongst many factors for atherosclerosis. Yeah. You know it's interesting. So you know social media kind of is so tricky for me because you know, I probably should do a better job at social media because, you know, I believe that I am fairly well trained, and have done a lot of research in this space and probably don't work hard enough to get the word out.

Inflammation, Lipids, and Cardiovascular Risk

And then I see these social media, influencers that have, you know, a million followers and they're saying, don't eat this or that or eat this or that, and they have no medical background or really nutrition background.

And so I find that really tricky and unfortunate because, you know, the data shows that there's over like 70% of people or something crazy like that get most of their content and information that they live their life by from social media.

And if that's the case, then the person that has a million followers, just because they're fun and cute or whatever they are, it kind of hurts me to hear while they're providing medical advice or nutrition advice. So, there's that. So.

What was the second part of the question? So, you know, your own perspective? Oh, yeah. Inflammation versus versus lipid disorders. And obviously everybody went through smoking, you know, but your view on lipid disorders, those causes versus, the markers we have for inflammation.

You know, I think that there's too much focus maybe on the one thing that is the trigger, because I think that so many of these problems are multifactorial, and inflammation may not necessarily be the problem as much as part of the process.

And then that is a cycle. Right. And so, you know, I think that we cannot ignore the impact, or diet in terms of LDL saturated fat and LDL, triglycerides going up with, you know, excess fat and sugar, and the impact of lipids or abnormal lipids on plaque formation.

We can't ignore that. And anybody who's telling you to ignore LDL or that it's okay to have an LDL of 190 because I am plant based is incorrect. The data does not support that.

And I think that it's really important for us to to not say that as long as I keep my inflammation down, because that absolutely is important and you maybe, you know, decrease your events overall.

But I don't think it's the whole picture. Right. And so you have to think about all these risk factors. And, and inflammation is one of those triggers.

And and if you already have plaque what's going to cause that plaque to rupture. Right. And then that plaque rupture is triggered by inflammation or irritation.

What irritates the plaque. Right. I mean, what irritates the plaque and causes that plaque to rupture and that's sort of that inflammation. And so I think what I think people need to realize is that they're all they all live hand in hand, and that if you you have to kind of treat all the different problems and that inflammation is triggering worsening problems, and then problems are triggering more inflammation, but that we can't just say that we can treat one thing and not worry about those other ten things that we have to worry about.

Which is unfortunate, because it'd be easier if we could just say, oh, you know, I'm going to focus on this one thing. But the reality is, is that we need to focus on all of them.

But with that in mind, changing your diet and moving more and sleeping all those habits, they help all of these problems. Right. And so it'll improve your lipids.

It'll improve your, obesity. You'll reduce your risk of diabetes, it'll reduce your risk of heart disease. So changing light and decrease inflammation.

So changing your lifestyle will absolutely reduce your inflammation and all those other risk factors for disease. Okay. Well I certainly, as you know, agree with you.

And if you were to teach a heart patient nutrition, you would educate them on whole food plant based nutrition as the path. Yeah. So I work say patients see patients regularly.

And most people will know that I tell people to eat at least plant forward. So I like to meet people where they are. And so if you are typically eating a load of processed foods, me moving towards 100% plant based sometimes doesn't work.

And so I'm okay with the space in the middle and I'm not afraid of it. So I will sometimes I sort of see where people are and try to figure out and test the waters and say, what if you did this instead of this?

And I find that that's been more impactful for me, because people then they feel that it I'm approachable. They are they feel they can surmount, the diet hurdle.

And we kind of slowly build up and I say, you know, I want you to get here and this is where you are, but we're going to work slowly to get here. And I think that that has been most impactful for me to make change.

And my patients are doing really well. I'm really proud of them. Well, good for you, because, we have so much work to do. And, you know, many of us are excited about this Make America Healthy Again movement.

I don't know that we're going to have a plant based advocate in the administration. I'm praying we are. And just a comment you made on social media. You know, there's, you know, some of the big podcasts and one of our colleagues from England, a cardiologist who's done very well in getting his name in the paper all the time.

I debated him about ten years ago and, was offended by his, what I would call wacko ideas, you know, told Megan Kelly on her podcast, meat. Meat is excellent.

Eat all the meat you want, eat meat whenever you want. And this is, you know, a prominent certified cardiologist when you know, are there 100, 200, 300, 400 peer reviewed papers that could take them to task just for cardiovascular disease, let alone colorectal cancer and diabetes, too, and the rest?

But, yeah. That's what I mean. That's what's so sad, right? Is that, you know, there's it's so confusing for the for the consumer. They're trying to figure it all out.

And everybody comes into my clinic or I also have a telehealth practice. And so, you know, you know, I see all these different patients who are in their different parts of their health journey and they're so confused, which, you know, I don't blame them on my own family's confused or like, well, I read this or I heard this and, you know, and I, you know, I always listen to what's happening in the New York Times and, you know, there's an article and then there's an article that debunks that.

And then, you know, and so people are like going in circles, like, who do I believe? And and I do think that that's a tricky thing right now in nutrition.

And I think it's been you have to be real careful about who you trust in this space. And what I recommend is find somebody who seems to have, you know, are well trained, who understand the process, have really done the nutrition education, and try to follow them and follow what they're doing and that's it, and try to ignore all of the others because there's so much nonsense out there that is going to confuse you.

And one day you're going to eat chia seeds, and the next day you won't, because you could find somebody who says that they're bad as well as they're good.

Okay. Well, I just want to before we go to the last important topic, I just want to give a shout out again, people, when you're done listening to this interview, watching this interview, go over to your favorite bookseller and look at body on fire.

Doctor Agarwal and her, classmate from Tufts, doctoral, there's also an accompanying cookbook. And I think all the secrets that have helped Doctor Agarwal recover from, you know, serious and limiting rheumatoid arthritis from mind body to fitness to nutrition to hydration.

I've read the book.

Nutrition Guidance for Patients

I think I actually have my name as a little endorsement book from four years ago. No problem. But, I had sitting in my waiting room. So when people are waiting to get in, is there for them to look at.

But for the rest of you, it's a highly recommended resource. And the last place is certainly, in the last year, gotten appropriate attention is for completing, let alone designing, but completing a randomized trial of taking people and putting them on a healthy, whole food plant based diet with low amounts of olive oil or a high amounts of olive oil.

Always a hot button in the plant based world. You know, I interviewed Doctor Esselstyn. God bless him, at age 91 as part of this summit. Third year in a row. I've interviewed him. He's such a joy.

But go ahead and tell us what the study was. And, you know, summarize the major findings. Yeah. So, you know, I think that people often there's so much excitement about the Mediterranean diet, and I like the Mediterranean diet.

I think that ultimately the Mediterranean diet is a plant based diet. The nuances though. So what we typically do is we'll do a study and we'll say, okay, the Mediterranean diet.

And we found in all these studies that the Mediterranean diet was effective compared to a Western standard Western diet. And all is true. Mediterranean diets are absolutely better than the Western diet but was never done has been compared.

With a mediterranean diet to a 100% plant based diet. And really what I was interested in is the facets of the Mediterranean diet that are super hyped up, which is like olive oil and fish.

And so I decided to tackle olive oil and try to understand, does olive oil in itself help the body, or is it the is it the plants in the plant based eating in the shift away from a standard Western diet that's really impactful?

So I designed a study where I did 40. I took 40 patients in a crossover design. So that means that people are their own control. So that means I put 20 people.

I put everybody on a plant based diet. So they were on a standard Western, and they all moved to a plant based diet. And it was a whole food plant based diet.

Not necessarily, you know, not, you know, ultra processed foods. It's that are that can be vegan all were removed and they were all put through an education session, an education program that was eight weeks long.

And then we had half of the group. So 20 of the patients were on a high olive oil or in a high olive oil cohort. And then the other half were in a in a low olive oil core.

And what you may not know is that Mediterranean style diet eats. They eat almost four tablespoons of olive oil per day. And the American diet actually almost less than a tablespoon of olive oil per day.

So I wanted to kind of compare low olive oil to high. And and so I had them eat for four weeks at a plant based diet with high olive oil. And then I washed it out.

And then I had them eat, a plant based diet with low oil. And similarly, I did the low oil people and they crossed over, and then they ate high olive oil.

And ultimately, you know, based on time, I'll just sort of sort of condense it and say, we found that people who ate a plant based diet with low olive oil had more LDL reduction than people who ate a plant based diet with high olive oil, calling into question that maybe the olive oil itself isn't the part of the plant of the Mediterranean diet that's so beneficial.

And so what I'd like people to take away from it is to say, okay, you know, there were fallacies with my with my study. I'll fully admit them. You know, crossover design studies can be like that.

And when you do a wash out and those of you who are science nerds out there might say, oh, you know, the washout wasn't long enough. And, you know, I spent a lot of time with some of the lead olive oil study organizers, and they thought a week would be a long enough for a washout.

But it turned out a week wasn't long enough because people don't want, once they've changed and made their dietary change, people don't want to go back to bad eating, right?

Once you've educated people and they've change behavior, people don't want to go back. And that's what's really tricky about nutrition studies and how to compare a pre pre education.

And a post is easier than half educated. But shift the diet and then tell them to eat differently is very difficult because nobody wants to go back and I think that was a huge confounder of our data.

But I think the nut of it is, is that olive oil may not be the godsend or the nutrition and magic bullet that people are looking for, and that maybe eating less olive oil is better for LDL.

Now, that doesn't mean we should.

Olive Oil Trial and Study Findings

There's no role for olive oil or that olive oil may have impact or benefit in some neurologic diseases, or if you have a low amount of fat intake in general and you eat olive oil, could that be impactful?

There's data from blood pressure on olive oil that's interesting in people, but I think we can take away that if you suffer from excess weight, and you that you don't need that olive oil to make yourself healthier.

Now, whether you have low weight and you eat a little bit of olive oil, it probably doesn't matter and maybe is okay. But the people sort of the average American doesn't need olive oil to make themselves healthier.

What they do need is to move away from a Western diet, to eat a more plant based, as plant forward, as unprocessed. They can eat all day, every day, and that's what we should be doing.

Along with movement, along with working on their sleep. But that's the stuff that we should be focused on. And whether you're perfect doesn't matter to me.

I just want you to move more towards plant forward. Okay? And for those interested, that study is called recipe for Heart Health. It's been published in the journal American Heart Association, which is a very prestigious journal.

It's very hard to do nutrition science with humans and, you know, and have them stick even for the period in this study, which was, you know, four weeks, four weeks with the washout and all the education.

But so congrats. I still have the thank you. I mean, sorry to interrupt, but I still have the gut, data to publish. We're still analyzing that. But we did a microbiome analysis as well pre and post.

And I look forward to interpreting and publishing that data. And we also checked urinary hydro saw levels, which is a measure of the amount of, you know, adherence to olive oil.

So all sorts of little things that we still have yet to publish. So to be continued. Now just make sure if I say this statement, you agree, though, that both arms of this study, the whole food plant based diet with less than a teaspoon a day of olive oil and the whole food plant based diet with four tablespoons of the olive oil, showed improvements over the baseline of the standard American diet.

These people were eating. 100%. So anything away from the standard Western diet with high or low olive oil did significantly better by just moving to eating whole food plant based.

Are you going to do like the, documentary You Are What You Eat that Chris Gardner was involved with? You know, the studies over, but are you going to, you know, call these people at six months or a year and ask, you.

Know, they're doing nothing. Changes. You know, I have another couple of things up, my sort of mental sleeve of where I want to go with the nutrition studies and how I want to change things and impact.

So, to be continued on that. But in terms of follow up with these patients, we didn't follow up with them at the six month mark. Really? My graduate student moved on, ironically, to work with Chris Gardner.

So she is the first author on this paper and your clinic. And she sent me to watch because she is doing great work. And, and she is now working in Chris Gardner's lab.

Go figure. Let me just touch one more high point and we'll get off. I mean, so many nutrition controversies out there, you know, carnivore versus plant based, low protein versus high protein.

But again, just circling back to this make America healthy again. You know, the the social media headlines is seed oils. Let's just take organic canola oil are Satan are ruining American health and some feel and Chris Gardner is one of them.

He's been very prominent in the New York Times and other places that it's the food that seed oils are in. The hyper

processed, ultra processed food is not the oil itself.

You have any, comment on that? If somebody said to you, Doc Agar, well, I don't really like olive oil, but I put a tablespoon of organic canola oil on my salad.

And is that okay with you, doctor agar? Well, you know, I think so. To Chris's point, I think ultra processed food is the absolute enemy. And so most of our foods and 50% of them are over 50% of the American diet is ultra processed foods.

And so it's almost hard to distinguish, you know, the oil itself from the food because so many people are eating that, you know, junky food. The other thing then took a look at oils in particular, you know, canola oil, maybe better than some of the other oils in terms of omega three six ratio, which is true.

So it might be better than some. But what I always tell people is do we actually need the oil at all? Right. It's a concentrated form of fat. And if you look at our study, we gave everybody and we didn't do a perfect job because the fat intake in the high olive oil versus low was different, 48 versus 32% fat.

But what we tried to do with the low, low olive oil group is we gave them fat in whole food plant based form. So why wouldn't you eat avocado instead of avocado oil?

Right. And so I think that I want people to take away that it's not necessarily I'm not sure that any oil is good for you. I think that there are certain oils that are less bad for you, and that maybe if you want to have a little bit, probably is okay.

But what I prefer you to eat is the actual whole food. Okay. I think we'll leave the wisdom there because it's key wisdom. And everybody please go over and study up and make that right.

Well, your best friend for credible information. That's why so much wanted it around. And be sure to look at her book and read it. It's a very nicely priced as a paperback, so it's something you should have in the cookbook too.

So I appreciate you taking your time and pleasure. Kudos to all the work you're doing. I know how hard I'm trying to do a little clinical randomized study right now, and I got on top of a practice.

It's not as something that you should. You should join our work group. You know, I'm the chair of the nutrition work group for the American College of Cardiology, and we'd be delighted to have you on our team now.

Okay. We'll follow up afterwards. And, I accept. So have a wonderful day. Go back to your family. Thank you. Good talking to you. Take care. Jill.