

Conversation with David Brady, ND

Interview by Sheldon Baker

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Integrative Medicine: A Clinician's Journal (IMCJ): You've been practicing integrated medicine for 30 years. That makes you a pioneer in that health and wellness category. Is it hard to believe?

David Brady, ND: I look in the mirror and evidently, it's been 30 years. The entire time, since 1991, I've been involved in private practice. I've simultaneously always been in academic medicine as well and spent about 25 years at multiple institutions but mainly at the University of Bridgeport in Connecticut as the Director of the Human Nutrition Institute overseeing their very well-known ground-breaking graduate program in interventional nutrition. I also served as Vice President of all health sciences for the university for about a decade. I have also always been on the nutritional supplement industry side from a formulation standpoint as a chief medical officer of Designs for Health, as well as in the diagnostic lab space as chief medical officer and founding partner of Diagnostic Solutions Labs, LLC (DSL) where I have helped in the development and clinical application of innovative integrative and functional medicine testing. I've always had my hands in different buckets, and they all seem to synergize with one another. Still, I always stayed in private practice the entire time because I felt it was very important to be involved and treat people with challenging conditions. That really informs you like nothing else.

IMCJ: How long have you been with affiliated with designs for health®?

Dr. Brady: It has been 20 years as of September 2023.

IMCJ: What is your role at designs for health?

Dr. Brady: As the Chief Medical Officer, I've been the primary product designer and formulator for the company's products. From very early on, I have been overseeing the entire science R&D team and everything from new product development and existing product renovation to overseeing research and clinical trials. In addition, I have oversight into many of our raw materials regarding vetting and due diligence before it goes to compliance and regulatory. Another role my team and I have is practitioner education, coming up with all the collateral and translational science material which allows practitioners to use our products for the right reasons and at the right time so that they provide good outcomes.

IMCJ: You are also one of the foremost authorities on diagnosing fibromyalgia.

Dr. Brady: That's what they say.

IMCJ: How long have you been researching that awful condition?

Dr. Brady: Also, about 25-plus years. Very early on, I developed a strong interest in fibromyalgia out of being in practice and sheer desperation. I was trying to help people who kept coming in with the disorder and a complex constellation of symptoms. They were coming in with that diagnostic label and I was trying to figure out what was actually wrong with them because a few of the off label or repurposed drug interventions that were approved for it didn't seem to work very well and I knew there were deeper issues. As a result, I got involved in it through sharing that experience with a few colleagues who were sharp, including Michael Schneider, DC, PhD, now a researcher at the University of Pittsburgh. We decided to do our own literature review and research and try to figure out the cause. We both ended up individually going into academic medicine, and both did research, published various papers together, and textbooks chapters in peer reviewed medical research journals. I wrote a book, *The Fibro Fix*, to provide information for the public. I was just

trying to stay on top of this very elusive and difficult to deal with chronic complex disorder. It's been a long journey, but certainly not been the only focus of my career clinically.

IMCJ: What do you think causes fibromyalgia?

Dr. Brady: It's a little fuzzy around the edges. There's not a universally accepted or absolute ideological theory that has had broad consensus. I firmly think most cases where people get diagnosed with fibromyalgia, even though it may or may not be an accurate diagnosis, they really have a post-viral syndrome of some kind. I think they have up-regulated immune pathways and very deep tissue inflammation and microglial activation. It changes their perception of pain and causes fatigue just like it does in other post viral syndromes. such as chronic fatigue syndrome and now long-haul Covid. That's why I think a lot of it, but not all of it, is post viral syndrome. It brings in a lot of issues such as mitochondrial dysfunction and energy production problems. A lot of them have concomitant issues like IBS and enteric nervous system issues and almost 100 percent have a correlation with metabolic thyroid issues on top of everything else. It's a complicated mess. I have written a lot about it in my publications, because there's really no good differential diagnostic criteria that are like lockdown accurate. There's no lab test as a "fibromyalgia factor", positive or negative. It just doesn't exist. It's a clinical diagnosis combined with excluding things and then really looking at the person. It takes someone with a very skilled, integrated functional medicine background to understand it because otherwise a lot of people get labeled with fibromyalgia that they don't have and get put on medications that usually do not work. Some have myofascial pain syndrome, or clinical signs of hypothyroidism. Some of them have chronic fatigue syndrome, but a lot of people just get thrown into that fibromyalgia category if they have muscle pain. A middle-aged woman who has muscle pain and complains of fatigue, gut issues and brain fog will usually get a diagnosis of fibromyalgia. Therapies are then often misdirected. Most lay people and even an alarming number of healthcare providers simply think of fibromyalgia as a muscle disorder. It's not a muscle disorder. It's a central nervous system disorder. One of the main symptoms people perceive is achiness in the muscles, but the problem is not in the muscles. The problem is the perception of pain that you feel in the soft tissues and in the muscles. You can direct therapy to the muscles all day long, whether it's medicinal or electrical therapy or physical medicine. Still, you don't get anywhere because that's not where the problem is.

IMCJ: I appreciate that explanation. But can the symptoms of fibromyalgia be treated?

Dr. Brady: Yes, most definitely you can make someone functionally much better, but there's really nothing that would be considered universally curative. There's no curative agent, but you can help people. One of the best ways you can help them, especially as an integrated functional doctor, is diagnosing them right and finding out what's really wrong because I'd say a majority of time when people come in and say they have fibromyalgia they really have other things that you can fix much easier. For example, they may have mitochondrial energy dysfunction issues or hypothyroidism that you can deal with. Or, as I have mentioned, myofascial pain syndrome, which is much easier to treat than true classic fibromyalgia.

When we start doing literature and research reviews, it's difficult to even trust a lot of what the literature says about fibromyalgia because when you look at the inclusion or exclusion criteria and given the lack of a quality differential diagnostic process, you're not even sure the person who they're doing research on has fibromyalgia when they say they have fibromyalgia. So, it can be quite difficult.

IMCJ: I had a good friend who was diagnosed exactly as the examples you have given. Half a dozen different things were dismissed and the doctor's kept coming back to fibromyalgia. But I don't feel it was fibromyalgia. Ultimately, he passed away from Covid.

Dr. Brady: Sorry for your loss. True classic fibromyalgia is a complicated central nervous system pain processing disorder, and all the other hypervigilance and anxiety, as well as some mild depression and IBS sleep disturbance, are all part of the CNS dysfunction. It's way more common in a female's nervous system and the neurotransmitter adaptation patterns because of a stressor of females versus males. Whenever a biological male comes in saying they have fibromyalgia, I'm even more doubtful that is what's going on. It's not impossible. But it's unlikely.

IMCJ: I want to cover some of designs for health® products that include American River Nutrition (ARN) ingredients, namely your products such as CoQnol™ 100 and 200 which includes GG Gold from ARN. What is your clinical experience with Ubiquinol and the GG ingredient?

Dr. Brady: It's a real go to combination agent because many people with chronic complex illness see a clinician like me, or most integrated functional practitioners, and the major complaint is significant fatigue. We know in the chronic complex disease category mitochondrial regulation energy and ATP r production are often dysregulated, causing fatigue, brain fog, lack of exertional tolerance, and post exercise/exertional myalgia and fatigue is exceedingly common. A lot of times it comes down to energetic production and energy metabolism. If you look under the cover using organic acid or metabolomics

testing for example, you often find people who are really struggling in aerobic metabolism and Krebs Cycle, and they're stacking up into anaerobic metabolism and building up lactate and other waste products. When you intervene with CoQ10, it can be quite helpful. I've always been less than blown away by the clinical results of using just CoQ10 in isolation though. For many years, all we had was ubiquinone. Then Ubiquinol came on the scene, and I think that performed a little better, particularly in older people. You lose a little bit of the ability of that conversion step as you get older. Most people who are young don't really have a problem with it though. You can select one or the other form and you're probably going to get the same kind of outcome in non-elderly subjects. For a long time, ubiquinol was so much more expensive. We always said on younger people I'll just use the less expensive form and with older folks I will use the ubiquinol. The difference wasn't great. But what I found made a big difference was GG (Geranylgeraniol), as it intervenes more precisely in the heart of isoprenoid biochemistry, and that only recently became possible when GG was available as a nutraceutical raw material. As I previously stated, it sits at the center for isoprenoid biochemistry and it's an endogenously produced molecule that is the backbone by which the body can then construct many different things. Geranylgeraniol is an important compound that plays critical roles in human physiology and biochemistry. GG is involved in endogenous CoQ10 production, healthy muscle and bone function, steroid hormone regulation, and cellular energy production. GG is the mother molecule of prenylated proteins which are very important for muscle structural health and physiological function. GG is also the mother of vitamin K and of a lot of other important compounds through that isoprene pool. GG is a super powerful and important molecule which I hadn't discovered earlier in my career, even though it had been researched quite extensively in Japan through a drug development process, but only recently is available through Designs for Health (DFH) and our affiliate manufacturing company American River Nutrition (ARN).

One of my mentors once said just when you think you've come up with the best new idea you ever thought of, and you're about to publish it and have your Nobel Prize in medicine speech all planned out, you might want to renew your literature search and see if Japanese researchers previously published on it 20 years ago.

IMCJ: So, no Nobel Prize, but a greater understanding of how the combination of ingredients work in our body.

Dr. Brady: Right. GG had been in development for quite a long time in Japan as a drug agent for frank mitochondrial mitochondriopathy syndrome and major energy deficiency states. Dr. Tan, the President of American River Nutrition, one of the experts in isoprenoid biochemistry, has a long history of working with molecules like this. He was able to

determine a way to isolate GG and did a lot of his work on the novel form of vitamin E known as tocotrienols, which are somewhat related as to their raw sourcing. It was a wonderful find. What we did at Designs for Health was to try to harness the power of ubiquinol and GG in combination because it provided a clinical one-two punch. You're giving the ubiquinol as the exogenous input into the CoQ10 reserves for energy metabolism. Then, when you give GG the mother molecule for greater endogenous production of CoQ10, this creates a dual action on CoQ10 influenced metabolism, both exogenously and endogenously. Thus, for a while the material was called DuoQuinol (i.e., a dual source of improving CoQ10 status). While you're providing an immediate effect with ubiquinol, you're giving the GG precursor for the body to make more of it over the longer-haul. I find people respond much better than just using straight ubiquinol. It can often be combined with other things that you would expect, such as nicotinate riboside, NMN, or just phosphorylated B vitamins and ribose, PQQ, all things we use in mitochondrial up-regulation. But I feel ubiquinol GG combos are the most important.

IMCJ: Did Dr. Barrie Tan approach you to include ARN ingredients in your product formulations?

Dr. Brady: I've been following Dr. Tan's work and talking to him at trade shows for 25 years. He's an amazingly smart individual. Dr. Tan not only understands biochemistry and how it acts in the body, but being a chemist, he understands the physical molecular properties, how to find them in nature, then how to viably extract them and make them into a usable ingredient material for use in supplements for therapeutic purposes. That's hard to find, but he understands both sides of it. I first became aware of Dr. Tan's work in tocotrienols, and then learned about GG as a spin off to that. He has a wealth of knowledge.

Dr. Tan is now publishing a paper on CoQ10 and GG usage in mitigating statin side effects in people who are intolerant of statins and get a lot of myalgic fatigue and things like that when they take them even at lower doses. If you take statins and you want to be proactive, also take CoQ10 as it can be depleted. But it's not like you take high dose statins plus CoQ10 and everything is fine. It just doesn't work like that because CoQ10 is only one of the things that gets depleted when you're blocking a high-order up-stream enzyme like HMG-CoA reductase. You also get deficiencies in vitamin K and you can get protein-related muscle deficiencies. There are also deficiencies in hemoglobin and things like that, so by replenishing with GG you're giving the body a building block to make all of these important compounds when you use ubiquinol and GG together. In that application it seems to be much more effective.

IMCJ: How about CoQ10 for fibromyalgia? Is there any connection there?

Dr. Brady: Yes, we use it all the time in patients who either have fibromyalgia or have a fibromyalgia label, because when we test them, they generally have mitochondrial issues and they're struggling with energy and ATP production. They tend to be a little stacked up into anerobic metabolism and they have high lactate levels. CoQ10 and GG in combination can help alleviate some of their fatigue and muscle soreness. It's not always like a magic bullet and curative, but it can be very helpful.

IMCJ: I read recently about a study published in the *Journal of American Heart Association* found that COQ10 supplements used in tandem with other treatments reduce muscle pain and weakness.

Dr. Brady: Absolutely. There are a couple of medications that are now being used instead of statins in statin intolerant people for managing lipids. They have their downsides as well, but before that I just can't tell you how many patients I've had who said their cardiologist is just insistent on them using a high statin dose even though they didn't look that bad, at least to me. They have robust HDLs, their total cholesterol/HDL ratio is in the threes, and you do an NMR advanced LDL particle analysis, and they have a *pattern A* fluffy, nice, and non-risky LDL. However, if their LDL numbers are above that magic line, they want to use statins to get their numbers down exceedingly low, despite them complaining of the fatigue and constant muscle ache. It's difficult to convince them otherwise, and the patient understandably is scared not to follow their cardiologist's recommendation. Some of them feel like they got hit by a bus when they take high dose statins. They're looking for other options and you're trying to thread that needle with them. I've gotten some cardiologists to play ball with me and at least lower the statin dose and we have the patient also using CoQ10 and GG and things like that to favorably manage their cardiovascular risk as demonstrated in serial lab assessment and this can sometimes satisfy the cardiologist. I feel some of that comes from the pressure of standards of care guidelines and medicine that drives such recommendations. Nevertheless, I think with statins they've over applied and have extrapolated the research data for secondary prevention to primary prevention, which is a mistake.

When you look at the hard data that's very favorable on statins much of it is to prevent a second heart attack for someone who's already one. They then seem to reflexively think that since it may prevent a second heart attack then maybe we should use it broadly on the public to prevent a first attack the minute their lipid panel doesn't confirm to their ever-tightening standards. But it doesn't seem to have worked out the way they may have planned, and the number of people to treat is very high with statins for

primary prevention. I feel many are suffering from statin induced side effects, such as fatigue, myalgia, and other things, and I'm not sure how many of them are getting the benefit of what is being prescribed.

IMCJ: I believe statins are also being used for people with long-haul Covid-19.

Dr. Brady: Yes, statins are being used for long-haul Covid-19 syndrome patients. There are many other uses for statins now, admittedly off-label. For long-haul Covid, and other things, doctors are generally using them at lower dosages of 10mg, or something like that, but not 40mg like they often do for dyslipidemia. Not as many people have problems with them at the lower dosing, and I must admit that statins have a therapeutic benefit beyond their ability to lower LDL or lipids. They can sometimes help get to the heart of deep tissue inflammation that occurs in post-viral syndromes, microglial inflammation, small vessel, and endothelial dysfunction. They use them in long-haul Covid for modulating what's called the fractalkine pathway in endothelial dysfunction. I've not been terribly impressed by the low dose statin and antiviral (usually Maraviroc) combination in long-haul Covid, but some people have seen some benefit.

IMCJ: Overall, just how well-known is GG?

Dr. Brady: I'm always surprised that more people don't know about GG. Partly, I think it is because it's got this crazy name of geranylgeraniol. That's why people call it GG. Since we brought it into the designs for health product line it's created an educational hurdle because people don't know about it. Doctors didn't learn about it in school, and it is hard to get doctors to get granular enough to understand isoprene biochemistry. It's just so pivotal and important in such a key biochemistry area though, so it is worth the try. I'm glad our company has taken on this challenge of GG and we're the only professional line that carries it. I wish more people were aware of it and used it because I feel patients would be getting greater health benefits from it.