

Active Living with Arthritis Podcast #6

The Relationship Between Inflammation, Arthritis, and Nutrition

Karen Jacobs: Welcome to the arthritis answers podcast, presented by ENACT center at Boston University as part of our Interact with ENACT series. We're here to bring you evidence-based information related to arthritis and rehabilitation. Make sure to subscribe to our podcasts to receive episodes as they're produced. I'm Dr. Karen Jacobs, an Occupational Therapist, professor in occupational therapy at Boston University, and your host for this very interesting podcast about inflammation, chronic disease, arthritis, and nutrition. I'm delighted to be speaking with Dr. Kristin Baker, Assistant Research Professor, Clinical Epidemiology Research and Training Center, at Boston University's Medical School. Let's get started, Kristin. Thank you for being with me today. What is inflammation?

Kristin Baker: Well, Karen, inflammation is the body's response to an injury, or an illness, like if you get sick, or if you're exposed to a toxin or an irritant. We think of inflammation, most people, as blood flow will increase, you get some swelling, redness, and pain. Short term acute inflammation is protective, and it will remove any irritants or toxins that you've been exposed to, or start the healing process for an injury or an illness. And the body has very specific mechanisms to turn these inflammatory processes on and off. They're tightly regulated to promote healing and health. If an inflammatory process is left unchecked, you can have damage to body tissues. There's mounting evidence that shows that chronic diseases are preceded by a chronic low-grade inflammation.

Karen: So, how is inflammation, again, related to chronic disease, and specifically to arthritis? You began to explain that, but could you go into a little bit more detail?

Kristin: Sure. So, as I was saying that there's mounting evidence that many of the chronic diseases that we're aware of that occur largely with aging, such as arthritis, cardiovascular disease, diabetes, and obesity, are preceded by this chronic, low-grade inflammation. So for example, if we take out arthritis specifically, many people think of sort of two umbrellas of arthritis. There's

sort of what is called the inflammatory arthritis, and the more degenerative, which would be known as osteoarthritis. But what I want to make clear to people that obviously the inflammatory examples like rheumatoid arthritis are called inflammatory because there's this systemic inflammation that occurs, so throughout the whole body, aside from maybe just the joints being affected, whereas osteoarthritis is more localized. For example, you might have osteoarthritis in your knee or your hip. But what I want people to understand is there is an inflammatory process that's going on in that type of arthritis although it's not generally systemic, it's more localized to the joint. But somehow the inflammatory mechanisms have been shifted and are out of balance in both of these types of arthritis.

Karen: So How is nutrition related to inflammation?

Kristin: Well, some of the most common risk factors for chronic diseases are lifestyle choices, including nutrition, but also like physical activity, exposure to environmental toxins, like smoking for example. So choices we make for our life. All of these risk factors have also been shown to upregulate inflammation. So, nutrition can affect whether we have more inflammation or less inflammation. What you take in your diet can regulate these inflammatory processes.

Karen: This is very interesting, and I think our listeners would really like to know about the major components of the diet that relate to inflammation.

Kristin: So, I want to look at the big picture, and I want to talk about two major ones that are really important, and I think people have heard a lot about, maybe more recently the role that sugar plays in a lot of the chronic diseases, but also the fat composition of the diet. Omega-3s is a term that's been thrown around for a number of years now that most people are aware of. And I want to hit a little bit on how the different types of fat can also regulate the inflammatory processes. So those are the two major components of the diet that I want to stress today.

Karen: So, could you go into a little bit more detail about how sugar and the glycemic index affect inflammation?

Kristin: Yes. So, glycemic index, first I just want to explain what that is, and people may or may not be aware of it, but this is another term that is being commonly used, and it basically just is an indicator of how quickly a food causes your blood sugar to rise. So, the higher the glycemic index, the more quickly the sugar rises in the blood and also the higher the response of insulin will be to uptake that sugar. So for example, glucose or sugar, straight sugar, has the highest glycemic index. So, a high sugar diet is a high glycemic load diet. And research has shown recently, a study came out that showed the more glycemic load, or the more sugar that you have in your diet increases inflammatory markers in the diet and also increases the risk of cardiovascular disease. So, somehow the high levels of insulin are throwing off the balance of the hormones and the inflammatory compounds.

Karen: So, what's recommended, a recommended level to keep inflammation in check?

Kristin: Well, I always like to give people sort of hands-on information that they can walk away with and maybe implement.

Karen: That would be great. I'm taking notes!

Kristin: So, first I love to start out with what does a typical American, or the average diet, consume in sugar per day? Teaspoons I think is an easier way for people to visualize it.

Karen: It is. I think so.

Kristin: So if you say around 22 teaspoons of sugar, so if you think of a teaspoon 22 times, that's a fair amount of sugar. That's how much a typical American in a day will consume. Now, the American Heart Association has come out with some guidelines. This is the only institute that has come out with guidelines on sugar intake so far, and are recommending to control this chronic, low-grade inflammation that seems to be associated with the glycemic load or sugar intake, a much, much lower level. And they have recommended around 5 teaspoons for women, a little bit more for men, they're a bigger body, 9 teaspoons, and about 3 teaspoons a day for children. So that's significantly different from the 22 that we're currently taking in.

Karen: Well, I cross that 22 often, and wrote down that lower number. So, how does someone determine the amount of sugar in their diet?

Kristin: The first thing I want to just go back and stress is that when we're talking about the 22 teaspoons, we're talking about added sugar. And I want to highlight that *added* part.

Karen: Oh, added part. Mhm.

Kristin: Because some people will say "Ugh, well should I not eat that banana or those grapes?" which are fruits that tend to be higher in sugar, and it's not that at all. Naturally occurring sugars in fruits and vegetables, dairy products, even some grains, make up a healthy diet, and that's not what people should be cutting out of their diet; it's the added sugar. So where do we get this added sugar from? I think it's easier than it may seem to look at the amount of sugar and try to decrease it in your diet. A very simple thing to do is just go back and choose whole foods. Get away from the processed foods. So, it's the processed foods and the habit we've gotten into to eating convenience foods that has increased our sugar intake so much, because these foods have a tremendous amount of added sugar. And I want to give you some examples of that. So, I think just the take-away message is first, more whole foods, more real foods. And what do I mean by that? Fruits, vegetables, you know, oats, rice, the grains, as opposed to the processed, packaged cereals, pastas, even breads, which are processed. So some examples of how processed foods have increased our sugar intake would, for example, be, say, a bagel. Somebody might say "I'm going to choose a whole wheat bagel over a muffin because I think that might be a better choice," but typically, a lot of our grain products that are processed and made have a lot of added sugar. So there is about almost 5 grams of sugar in a bagel, and almost all of that sugar has been added; it's not naturally occurring. A slice of whole wheat bread is very similar to what you would find in a whole wheat bagel. Another one I like to show people is a dairy product. So, for example, the flavored yogurts. Milk has naturally occurring milk sugars in it, so you might have about 10 grams of sugar in a cup of plain yogurt, but there is 20 plus grams of sugar when you choose a strawberry or some flavored yogurt. So there's a lot that we're

putting in it as we process them, flavor them, change them. So the choices you make really impact the amount of sugar you have in your diet.

Karen: Well, you know, this has been really interesting to learn about sugars. But what's the story with fat intake? And we only have just another minute or so to discuss fat intake and inflammation.

Kristin: Okay, so it's important to hit on fat too, because this was the other major area of the diet. So I like to always start with the modern diet that's sort of flipped upside down to how we used to eat before all these convenience processed foods. So we've heard that Omega-3 and potentially even Omega-6 people have heard, these are essential fatty acids we need in our diet. What it means is strictly, it's a different structure of unsaturated fatty acid. Omega-3 is a different structure than Omega-6. And I point that out because they are different structures, they play different roles in the body. Now, these fatty acids are incorporated into our cell membranes and are directly related to what types of inflammatory mediators are produced. Omega-6 fatty acids produce much more of the inflammatory mediators. Omega-3 fatty acids produce much more of the anti-inflammatory mediators. So, as I was saying, we're shifted upside down. It used to be we had a ratio closer to 1 to 1 of these types of fats in our diet. And what we see now is anywhere from 10 to 20 to 1. So almost 10 to 20 times more Omega-6s, the more inflammatory fatty acids, than of the anti-inflammatory fatty acids.

Karen: Well, you have given us so many good ideas about inflammation, chronic disease, arthritis, and nutrition. We're going to have to have you come back on our podcast series so we can learn more. But, I want to thank you very, very much for this informative podcast. And thank you, our listeners, for listening! If you'd like to give us feedback, ask questions, or tell us of other topics that you're interested in, please send an email to ENACT.

ENACT@bu.edu. On our website, www.bu.edu/enact, we have information about the center and a list of online resources. Until our next podcast, eat healthily and stay active.