

Anne Johnson: Welcome to Environmental Health Chat, a podcast about how the environment affects our health from the National Institute of Environmental Health Sciences. I'm your host, Anne Johnson.

It's springtime, the season of birds chirping, flowers blooming, and [sound of a person sneezing]—oh yeah—allergies. This time of year can be especially trying for people who suffer from asthma, a chronic disease that causes inflammation of the airways. Allergens like pollen are just one of many environmental factors that can cause someone with asthma to have symptoms like coughing and wheezing. Other common asthma triggers include air pollution, dust, cigarette smoke, and mold. But did you know that what you eat can also impact asthma? Your diet may even play a role in whether or not you get the disease in the first place.

Joining us to talk about the relationship between diet and asthma is Dr. Gregory Diette, Professor of Medicine at Johns Hopkins University. He's the Center Director for the Johns Hopkins Children's Environmental Health Center, one of 14 Children's Environmental Health and Disease Prevention Centers funded by NIEHS and EPA. To put things in context, Gregory started by telling me why asthma is an important public health concern.

Gregory Diette: It's important because it can be very distressing to people and also because it causes people to need to use medications regularly, and when it's severe kids miss school, parents miss work, people end up in the emergency department and in the hospital, and at the very worst people can die from it.

Johnson: And, it's on the rise.

Diette: Since the 1970s or early 80s there's been a steady rise in how many people have asthma in the United States and worldwide. And it's gone up dramatically from on order of about 4% of the population to nearly 10% of the population.

Johnson: Asthma now affects about 25 million people in the United States. 7 million of them are children. Many scientists are looking at what causes asthma and how to reduce its effects. Gregory is studying the role of a person's diet. It seems obvious why something like air pollution, which you inhale, would irritate the lungs and cause asthmatic symptoms. But what does food have to do with your lungs?

Diette: There's two broad ways that we're thinking about it. And one is that certain components of the diet may be pro-inflammatory. So it could be that on balance that the pattern of the foods that we eat actually provokes inflammation and makes the body have a heightened state of inflammation and more prepared, then, to react vigorously to something that's inhaled. The other sort of broad idea is that the diet also offers protective factors and, in particular, antioxidant capacity. The antioxidant capacity is the part of the ability of the body to fend off things that don't belong or might cause injury. And, so we also think that the diet, when it's a good diet, supplements or augments that protective capacity.

Johnson: To test these ideas Gregory and his colleagues are doing four studies. The first focuses on a group of 200 children with asthma from inner-city Baltimore. The team is tracking the linkages between the irritants the children are exposed to, the foods they eat, and the severity of their asthma.

Diette: This is a study of the real world. So this is our ability to look and see what people are actually eating, what they're actually inhaling, and what their actual asthmatic response is. The idea is that we can

look and see if there is a more exaggerated asthmatic response in the children whose diet is skewed towards what we consider to be the unfavorable diet as opposed to the more favorable diet.

Johnson: In two other studies, Gregory and his team have recruited volunteers who are actually changing their diet to see if they can reduce their asthma symptoms. One group is eating a daily dose of broccoli sprouts (that's the little plant that emerges when you plant a broccoli seed).

Diette: Other investigators have found that there's a compound called sulforaphane, which is in broccoli sprouts, and it's a very, very potent stimulator of the antioxidant system. So we're conducting a clinical trial where people are eating broccoli sprouts daily compared with a different kind of sprout that doesn't have sulforaphane in it, and we're looking at whether we can alter the response to an inhaled allergen.

Johnson: Another group of volunteers has switched to a Mediterranean-style diet; a diet that's been shown to have positive health effects in other areas, like heart health.

Diette: Mediterranean diet is one that's heavy in fruits and vegetables but also where the fats come from things like olive oil and fatty fish as opposed to meats. There's some—but very little—red meat. Lots of things like nuts, legumes, and so forth, and not so much in the way of sweets.

Johnson: The scientists are testing whether this diet or the broccoli sprouts help to reduce a person's response to a common asthma trigger. In a fourth study, the team is using mice to parse out the biochemical effects of various diet manipulations. Gregory says that study is already showing promising results, particularly with the use of a broccoli sprout extract.

Diette: The results haven't been published yet, but it does look clear that we can have an impact on the development of an illness that looks like asthma in mice, with that extract from broccoli sprouts. And, it looks like we'll have some evidence that we could reduce the likelihood of getting asthma and also improve asthma once it's already established.

Johnson: But those are early results and only in mice. While we wait for the verdict on how diet affects asthma in humans, Gregory says there are lots of other things people with asthma can do to keep their disease in check. For example: get a flu shot each year; you can also get an allergy test to find out what you're sensitive to and then avoid those allergens in your daily life. People with asthma should also pay attention to air pollution warnings and try to stay indoors when pollution levels are high. And when it comes to diet, although we don't know for sure, Gregory said adopting a Mediterranean style diet probably won't hurt, and it may help. Thanks to Gregory Diette for joining us today. Stop by our podcast page for more resources on asthma, the environment, and the latest research findings. You've been listening to Environmental Health Chat. I'm your host, Anne Johnson, and our podcast is brought to you by the Partnerships for Environmental Public Health, a program of the National Institute of Environmental Health Sciences. Find us online at niehs.nih.gov/podcasts.