

COMMENTARY

Demystifying the Glycemic Index: Implications for Practice

Anne L. Peters, MD; Jennie Brand-Miller, PhD | June 30, 2015

Glycemic Index: As Important as Drugs in Diabetes

Anne L. Peters, MD: I'm Dr Anne Peters. I'm here today with Dr Jennie Brand-Miller. We are going to talk about the glycemic index.

My very first research was actually in the field of nutrition. It has been a real interest of mine because I can help my patients just as much by teaching them nutritional principles (including how and what to eat) as I can by teaching them about drugs and insulin.

What would you like to teach me today?

Jennie Brand-Miller, PhD: I want to teach you that a low-glycemic-index diet is a shortcut to a healthy diet.

Dr Peters: I didn't know there were any shortcuts in life, but all right—teach me.

Dr Brand-Miller: The glycemic index is a tool that we use to rate carbohydrate foods according to their effect on blood sugar levels. Some carbohydrates are digested very quickly and make the blood glucose spike. These foods have a high glycemic index. Other carbohydrates that digest slowly have a lower glycemic index.

Perhaps the best example is oats. Steel-cut oats have a low glycemic index. Traditional oats that take less time to cook have a medium glycemic index. Instant oats which are flaked more finely are digested more quickly and have a higher glycemic index.

Dr Peters: Do you use numbers when you talk about this with patients, or is it just a concept? What is a high glycemic index value?

Dr Brand-Miller: We use numbers. A "high" glycemic index is ≥ 70 . A low glycemic index is < 55 . These are just convenient cut-offs.

Figuring Out the Glycemic Index of Foods

Dr Peters: What is the glycemic index of a piece of bread? My patients love bread.

Dr Brand-Miller: I love bread too. The good news is, among breads, there are low- and high-glycemic-index versions. You won't know unless you take the trouble to test it. You can't tell by looking at it.

Let's take "brown" bread. Many people think that because it's brown, it might be digested slowly, but it isn't. Brown bread can have the same glycemic index as ordinary white bread. The reason is that the particle size in brown bread has been milled as finely as that of white bread. Both have been ground as finely as a talcum powder. The bran in brown bread is finely divided and doesn't slow down the digestion of the bread in any way. Both brown and white bread have a glycemic index of around 70.

Dr Peters: So, what should I tell my patients?

Dr Brand-Miller: You should ask them to find whole-grain bread with visible kernels. Bread that is denser and less fluffy is good and more likely to have a low glycemic index—about 50. The only way to know for sure is to test it.

Dr Peters: Do you mean test it on the person?

Dr Brand-Miller: No. A glycemic index laboratory tests it.^[1] About half a dozen laboratories around the world specialize in glycemic index testing because it's impossible to guess a food's glycemic index. This is one of the reasons for contradictory findings in glycemic index research.

The Low-Glycemic-Index Diet

Dr Peters: The data have been conflicting. Intuitively, it makes sense to eat lower-glycemic-index foods to reduce the postprandial glucose level, yet when you look at the studies, some agree and some disagree. What has your research shown and how should we apply your findings to our patients?

Dr Brand-Miller: We have done lots of research on different groups of people. Let's use young, overweight people as an example. Our research has shown that when you give this group low-glycemic-index foods throughout the day, their blood sugar levels are lower by at least 60%. If you give them fewer carbohydrates and more protein, the same thing happens.

Even if you give this group a modestly higher protein level (about 25% of their energy intake), we still see a difference in glucose responses across the whole day when they ingest low-glycemic-index carbohydrates. The consistency is there, so the controversy has been resolved. You do see differences in blood glucose responses (specifically postprandial responses) across the day when choosing low-glycemic-index foods as part of a meal.

Dr Peters: Does that translate into improved glycated hemoglobin (A1c) or is this only relevant for that day? Do people keep this up?

Dr Brand-Miller: In people with type 2 diabetes, according to meta-analyses, you see an average reduction in A1c of at least 0.5% in addition to the 0.5% reduction achieved with a healthy, low-fat diet. Therefore, you might see a total fall in A1c of approximately 1%. You might ask, is that clinically meaningful when the same difference can be achieved by switching from old to new diabetes drugs? Lowering the glycemic index through diet is a nice way of lowering A1c without having to take another pill.

Dr Peters: I prefer that patients change their habits to be healthier. What about weight loss on the low-glycemic-index diet?

Dr Brand-Miller: In our study of lower-glycemic-index food consumption in young adults in Sydney,^[2] we saw double the fat mass reduction over 12 weeks. We had two groups. One followed an *ad libitum* conventional low-fat diet and the others were randomized to a low-glycemic-index version of that diet. The latter group was instructed to eat low-glycemic-index carbohydrate foods. Over 12 weeks we saw that the latter group lost double the fat mass (about 5 kg instead of 2.5 kg). They also improved their low-density lipoprotein (LDL) levels. The effects were both cardiovascular and weight-based. They improved their high-density lipoprotein (HDL) levels as well.

Implications for Practice: What to Tell Patients

Dr Peters: Let's say that I want to tell patients to start this low-glycemic-index approach to eating. What do I tell them? Should they have their food tested in a lab? How do I tell them to implement this, besides referring them to you in Australia?

Dr Brand-Miller: In simple terms, tell them to eat a breakfast that is more like the one their grandmothers ate. In winter, for example, they could eat steel-cut oats. In summer, they could eat muesli (but only healthy versions of muesli.) It's simple enough. At lunchtime, if having a sandwich, it's important to find out which bread has a low glycemic index and which does not. Some authentic sourdough breads have a low glycemic index.

Dr Peters: Is this information online somewhere? How can we find low-glycemic-index bread?

Dr Brand-Miller: They can go to glycemicindex.com, which is an official website of the University of Sydney. We have put together a database of about 3000 foods.

You will find that many generic foods have a low glycemic index—for example, castor beans, dairy products, fruits, and most vegetables (except potatoes). But when it comes to breakfast cereals, breads, and rice, there are low- and high-glycemic-index versions. Unless a particular brand has been tested for its glycemic index, then you're guessing. It sounds complicated but it's not. Once you give people a list of healthy low-glycemic-index foods, they can mix and match them in a way that is sensitive to their culture, food habits, and way of enjoying a meal. That's very important. We want to send messages that allow people to enjoy their meals.

Dr Peters: Of course. Because otherwise, they will balk and not do what you are suggesting.

Giving Back Cereal?

Dr Peters: One last question. I do a lot of continuous glucose monitoring, especially in my type 1 diabetes patients. The food that I hate the most is cereal. I watch my patients, and when they eat corn flakes, milk, and a banana, their blood glucose goes sky high. I tell people, "Don't eat cereal. In fact, perhaps you should just eat dinner for breakfast." But you are saying that there are types of cereal with a low glycemic index. Would you tell someone not to eat cereal?

Dr Brand-Miller: No; I don't believe that carbohydrates are the devil. I believe that carbohydrates are good for us and we also enjoy them. We just have to be a bit choosy about them. Some Kellogg's cereals have a low glycemic index. I don't know whether you have it here [in the United States], but the lower-glycemic-index cereals are Kellogg's Guardian® and Kellogg's All-Bran®, which have a shredded appearance—they aren't flaked. The glycemic index of flaked cereals tends to be quite high, even if they have a lot of fiber. What determines the glycemic index is the physical state of the starch in the food after it has been processed and prepared for eating. Some starch, in such foods as pasta and beans, remains resistant to digestion, meaning it's not immediately digested. If you put Rice Krispies® in your mouth, they dissolve very quickly. If you put a piece of pasta in your mouth, it doesn't dissolve quickly. That's part of the enjoyment—that you feel that shape in your mouth.

Dr Peters: It's fascinating. My patients are going to be so happy that we have had this conversation because I'm going to give them back cereal, but it will be low-glycemic-index cereal.

Thank you very much; this has been great. I loved talking to you.

References

1. University of Sydney. GI Testing and Research. <http://www.glycemicindex.com> Accessed June 12, 2015.
2. McMillan-Price J, Petocz P, Atkinson F, et al. Comparison of 4 diets of varying glycemic load on weight loss and cardiovascular risk reduction in overweight and obese young adults. *Arch Intern Med.* 2006;166:1466-1475.

Medscape Diabetes & Endocrinology © 2015 WebMD, LLC

Any views expressed above are the author's own and do not necessarily reflect the views of WebMD or Medscape.

Cite this article: Demystifying the Glycemic Index: Implications for Practice. *Medscape.* Jun 30, 2015.