Diabetes: Know the Botanicals Patients Are Using

Expert outlines popular agents, their effects, and how they interact with standard therapies.

By Miriam E. Tucker
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Washington — Some of the botan- ical agents used among diabetic patients may have benefit—but more data are needed, Laura Shane-McWhorter, Pharm.D., said at the annual meeting of the American Association of Diabetes Educators. Regardless of whether these unregulat- ed products are beneficial, clinicians need to stay educated on the topic, since “this is something that all of us get asked about at one point or another,” she said. Dr. Shane-McWhorter, a certified diabetes educator and a professor at the University of Utah in Salt Lake City. It’s important to make sure patients aren’t substituting complementary/alter- native therapies for prescribed medica- tions—cases of diabetic ketoacidosis have been reported among sewers who have, she said.

In addition, patients need to know that combining glucose-lowering botanicals with prescription diabetes medications may increase the risk of hypoglycemia. The following are among the most pop- ular of the more than 100 complemen- tary/alternative therapies being used to treat diabetes, Dr. Shane-McWhorter said.

Cinnamon
This everyday spice has received lots of atten- tion lately. Its active ingredient, the polyphenolic polymer hydroxycinnamaldehyde, is believed to enhance insulin action by in- creasing glucose uptake and glycogen syn- thesis. Side effects are limited mostly to the very rare topical allergic reaction.

But, like the others, it carries the theo- retical potential for an additive hypo- glycemic effect if combined with an in- sulin secretagogue.

In a randomized trial, 60 patients with type 2 diabetes were given 1, 3, or 6 grams of cinnamon four times daily or placebo. At 40 days, fasting blood glucose (FBG) had dropped from 209 to 157 mg/dL with 1 g cinnamon, from 205 to 169 mg/dL with 3 g, and from 234 to 166 mg/dL with 6 g. All changes were statistically signifi- cant compared with placebo, and the effect was still seen 20 days after cinnamon was stopped. Total cholesterol, triglycerides, and LDL cholesterol also dropped in the cinnamon groups (Diabetes Care 2003;26:3215-8).

The data are at least good enough to support a recommendation that patients use ½ to 1 teaspoon of ground cinnamon per day on cereal or other foods, she advised.

Gymnema sylvestre
From the Indian word “gurmur,” meaning “sugar-destroyer,” Gymnema sylvestre is thought to block both the craving for sweets and intestinal glucose absorption, increase cell permeability to insulin, and stimulate β-cell number and function. Hypoglycemia has been reported with this agent when combined with insulin secretagogues.

In two small studies, 400 mg/day of Gymnema sylvestre leaves significantly re- duced hemoglobin A1c values in both type 1 (from 12.8% to 8.2% at 26-30 months) and type 2 diabetic patients (from 11.9% to 8.5% at 20 months). The 27 type 1 pa- tients were able to reduce their insulin dos- es by a mean of 15 units, while 5 of the 22 patients with type 2 diabetes were able to discontinue sulfonylurea (J. Ethnophar- macol. 1990;30:281-94).

However, these authors did not report randomization or blinding, and there was a high dropout rate among the type 1 pa- tients. More human research using a stan- dardized version of Gymnema sylvestre is now being conducted in the United States by the Omaha-based company Informulab Naturals (www.informulab.com). Other diabetes medications may need to be adjusted for patients who choose to use Gymnema sylvestre, and it should not be used in patients al- ready on combina- tion therapy, Dr. Shane-McWhorter advised.

Fenugreek
Used for many years to promote lactation, fenugreek (Trigonella fenumgascum) con- tains a variety of ingredients including saponins, alkaldoids, coumarins, and glyco- sides. Its mechanism of action is thought to be related to its high fiber content. It delays gastric emptying and inhibits carbohydrate absorption, and may also stimulate insulin secretiion. It has also been used to treat hy- periinsulinemia and constipation, in addition to diabetes.

Side effects include gastrointestinal hy- persensitivity and topical allergies. It also may stimulate uterine contractions. Fenu- greek should be used with care in peanut- allergic patients, since it belongs to the same plant family. Fenugreek may interact with other antiocagulants (including Gink- go biloba and ginger), interfere with the ef- fects of steroids and hormones, and/or potentiate the effects of monoamine oxide inhibitors, she said.

In a study of 25 patients newly diag- nosed with type 2 diabetes, received 1 g/day of hydroalcoholic extract of fenu- gureek seeds, while the other 13 received place- bo daily for 8 weeks. Results included im- provements in mood and psychomotor performance, as well as lower A1c and FBG levels (Diabetes Care 1995;18:1375-9).

American ginseng appears to lower glu- cose better than does the Asian type, but few studies have been done in diabetic pa- tients. Observations are data from a U.S. analysis of 25 different commercial prepa- rations of ginseng in which the actual quantities varied from 12% to 137% of what was indicated on the bottle (Am. J. Clin. Nutr. 2001;73:1101-6).

Patients who choose to take ginseng should do so within 2 hours of a meal to avoid hypoglycemia. To avoid hormone- like effects, ginseng has been suggested for use during a 2 week holiday every 2-3 weeks, or limiting its use to 3 months, Dr. Shane- McWhorter said.

Aloe
A member of the lily family, aloe’s dried leaf juice was once used as a laxative in- gredient, but that was stopped because it sometimes led to decreased absorption and intractable diarrhea. The gel compo- nent, however, is still used as a topical wound treatment and internally for dia- betics. It is thought to be re- lated to its high fiber content.

In one single-blind, placebo-controlled study, FBG dropped from 250 to 142 (from 12.8% to 8.2% at 26-30 months) in 40 patients newly diagnosed with type 2 diabetes who took one table- spoon of aloe gel twice daily for 4 days, while FBG increased in the placebo group, from 251 to 257 mg/dL. Triglycerides also dropped in the aloe group, but there was no change in total cholesterol (Phy- tomec Medicine 1996;3:241-3).

In another study of 40 patients already taking the sulfonylurea glibenclamide, 20 were also given aloe for 42 days. Again, aloe reduced FBG from 288 to 148 mg/dL, compared with 289 to 290 mg/dL with glibenclamide alone (Phytopharmec Medicine 1996;3:245-8).

Although the data on aloe at this time are too limited to support its use as a treat- ment for diabetes, it is one of the most popular alternative diabetes remedies among Hispanic patients. If they choose to use it, the dosage is 50-200 mg/day of the leaf gel, not the cathartic (leaf juice) form.

Nopal
The fiber in this member of the cactus family is thought to decrease glucose ab- sorption and possibly increase insulin sen- sitivity. Also known as “prickly pear,” it’s usually eaten cooked, and is also used to treat hyperlipidemia and to prevent hang- overs. Side effects include increased stools and abdominal fullness, as well as possi- ble additive hypoglycemia with secreta- gogues.

In one study, 16 patients with type 2 di- abetes were assigned to broccoli nopal (Op- untia streptacantha Lemnae), 10 to water, and 6 to broccoli alone. At 2 hours, mean glucose dropped from 222 to 198 mg/dL, and to 183 mg/dL by 3 hours (Diabetes Care 1988;11:63-6). In another study, done by the same group, nopal combined with sulfonylurea produced a 41 mg/dL drop in alternative diabetes remedies among Hispanic patients. If they choose to use it, the dosage is 50-200 mg/day of the leaf gel, not the cathartic (leaf juice) form.

Bitter Melon
This pickle-vegetable from Southeast Asia and South America contains the hy- poglycemics momordin and charanin, the alkaloid monomordine, and polypeptide D. It is thought to promote glucose uptake and glycogen synthesis.

It has a long list of reported side effects, including diarrhea, possible mechanical abortion, and fasicity (harmful convulsions) in individuals with hereditary glyco- se-6-phosphate dehydrogenase defi- ciency. Interactions have been reported with sulfonylureas and may occur with potassium depleters.

The largest study done with bitter melon (Momordica charantia) involved 100 patients with type 2 diabetes who ingested an aque- ous suspension of the vegetable pulp after measurement of their fasting plasma glu- cose, which averaged 160 mg/dL. At 1 hour, glucose had dropped to 101 mg/dL. Following a 75 g oral glucose load, mean glucose levels dropped to 222 mg/dL, compared with a mean of 257 mg/dL, mea- sured in a previous day (Bangladesh Med. Res. Coun. Bull. 1999:25:11-6).

This agent should also be used with cau- tion in women of childbearing age and should not be used during pregnancy, due to the risk for bleeding or contrac- tions.

Make sure patients aren’t substituting CAM therapies for prescribed medications. Diabetic ketoacidosis cases have been reported among some who have.

Ginseng
Both the American and Asian versions of ginseng are in the steroidal family of gin- senosides, which have various hormonal and central nervous system effects. Depend- ing on which ginsenosides they contain (Rg1 vs. Rb1), they can either in- crease or decrease blood pressure and CNS activity.

Reported side effects include the “gins- eng abuse syndrome,” characterized by hypertension, anxiety, and insomnia. Gin- seng has also induced postmenopausal vaginal bleeding, and it interacts signifi- cantly with a long list of drugs including warfarin, diuretics, β-blockers, antipsy- chotics, antidepresants, and opiates.

In one randomized, controlled, multi- center trial, 36 patients with type 2 diabetes were given 100-200 mg ginseng or placebo bo for daily for 8 weeks. Results included im- provements in mood and psychomotor performance, as well as lower A1c and FBG levels (Diabetes Care 1995;18:1375-9).

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