

Blood Sugar Regulation in Pre-Type 2 Diabetes

KEY WORDS

blood sugar, diabetes, diabetic, glucose, insulin, pre-diabetes, Type 2 diabetes, purslane, mulberry, chromium, vanadium, apple

Maintaining a healthy blood sugar range has a significant impact on your health, quality of life and life expectancy. Blood glucose levels can affect how hungry and how energetic you feel and determine whether you burn fat or store it. Physical activity, weight control and healthy eating habits are essential and effective means of keeping your blood sugar at a normal, healthy level.

Types of Diabetes

Insulin is a hormone that picks up sugars in the blood stream and carries them into cells to burn for energy. Not enough insulin = higher and higher levels of sugar left in the blood, which in turn can trigger a whole cascade of adverse health events, including increasing blood vessel plaque (atherosclerosis). If cells start to ignore insulin (called "insulin resistance"), they do not respond to insulin's signals to accept sugar into the cell for energy production.

When not enough sugar gets into the cells, the cells are starved for energy and cannot do their job. If starved for too long, they start to die.

Diabetes is classified as Type 1 or Type 2. Type 1 is an autoimmune disorder that usually manifests in childhood or the teen years. The body's immune system attacks the insulin producing cells of the pancreas, which are damaged significantly. This results in an inability to make insulin, and people with Type 1 diabetes generally must take injectable insulin for the rest of their lives to replace their lost insulin.

However, with good blood sugar control and a healthy diet, plus good antioxidant dietary supplements, people with Type 1 diabetes can live long, healthy lives. Only 5 to 10% of people with diabetes have Type 1.

Type 2 diabetes is far more common, and is highly preventable. The basic problem is that the body stops making enough insulin, or the cells start to ignore insulin's message. Sometimes both can occur.

Type 2 Diabetes on the Rise

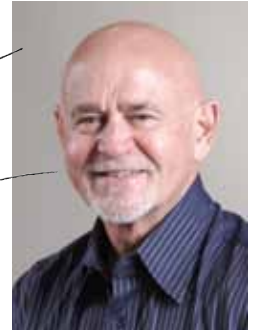
The rise in cases of Type 2 Diabetes is alarming. Diabetes is currently the 7th leading cause of death in the United States. And of the 22 million Americans with diabetes, half are unaware they even have the disease until so much damage occurs that they start to have physical complications.



Did you know that children born in the year 2000 and after have a 1 in 3 chance of developing this disease in their lifetime? In 1985, experts reported that about 1 to 2 percent of children with diabetes had Type 2. By 1995, the number stood at about 17 percent. More recently, in some areas of the country, **30 to 40 percent of children with diabetes now have Type 2.**

There is a genetic component to Type 2 diabetes. It tends to run in families, and is more prevalent among African Americans, Hispanic Americans, Native Hawaiians, and Native Americans.

To your good health,
Terry... Naturally



Genetics aside, why this huge increase in Type 2 diabetes? Major contributors to developing this disease are diet, obesity, and a sedentary lifestyle. And in America today, the consumption of refined carbohydrates, including white sugar and corn syrup, the reduction in any meaningful physical activity, and the catastrophic rise in obesity are largely behind the meteoric rise of this potentially life-threatening disease.

Though there may be many contributing factors, doctors agree that Type 2 diabetes is basically a disease of nutrition. With the right nutritional interventions, especially in the beginning stages of the disease, great progress can be made in preventing, reversing, or even curing this illness.

The Magic of Three

The three things you can do to have the best chance of curing or preventing Type 2 diabetes are:

1. Food Choices
2. Get Moving
3. The Right Supplements

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When in doubt, always consult your physician or health care practitioner. This column is to provide you with information to maintain your health.

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You may have heard that you need to do this from your doctor. Your blood sugar tests may have been creeping up, and the doctor says you will need medication soon if you don't get your blood sugar in line. You may have been told to lose weight, as if that was an easy thing to do.

I am going to tell you how to make some changes that will have a great impact and not be hard to incorporate into your every day routine.

Food Choices

The more food you eat, the more insulin you have to produce. But different types of food affect insulin differently. The worst culprit is white sugar and high fructose corn syrup. After that comes a class of foods called simple carbohydrates. These are foods that convert quickly to sugar in the body, with the natural fibers removed. An old adage is "Don't eat anything white unless it is cauliflower!" Avoid white bread, white rice, white pasta and white potatoes. You may not be able to give them up entirely, but start experimenting with substitutes like brown rice and whole grains you may not have tried before. Many people do better if they eat gluten-free grains.

Proteins and fats are burned more slowly and are not as burdensome on insulin production.



Try to make sure you have protein with each meal. It is healthy and satisfies hunger, so you aren't ready to go for a candy bar an hour or two later. If you eat between meals, make it a protein, as this is less taxing on your insulin system. Some choices might be hard boiled eggs or a piece of organic cheese. Low carbohydrate vegetables, like salad greens, cucumbers, broccoli, cauliflower, celery, pickles, and olives are good choices, too.

As for fats, they are not the enemy! Olive oil is one of the healthiest things you can do for yourself. There are people over a hundred years old in Italy who have *drenched* their food in olive oil every day. But stay away from too many animal fats (like butter) or, worse yet, something called partially-hydrogenated fats, which are in margarine, many baked goods, cookies, and snacks. These are chemically altered fats that are dangerous to your health.

When you eat higher carbohydrate foods, like grains, and sweet vegetables and fruits like carrots and tomatoes, try to do so with your meals that also contain protein and low-carb vegetables like those mentioned above. This will help to balance things out and minimize the stress on the insulin system.

The worst thing you can do is to drink sweet drinks all day (sodas or other beverages with sugar or sweeteners) or nibble on high carbohydrate foods (chips, crackers, candy, cookies) between meals. This revs up your insulin system and is very stressful to your body as it tries to manage this constant tweaking of blood sugar. I don't like artificial sweeteners for a number of reasons, but they are a problem for people with blood sugar issues. First, they keep

your craving for sweets active. Second, they trick your body into thinking a lot of sugar is on the way, and can disrupt the insulin system even if they have no calories. It is false that artificial sweeteners help people lose weight.



Get Moving

Find something physical you love and do it. If you hate it, you won't stay at it. It could be walking, bowling, square dancing—even window shopping can be good exercise if you keep moving. If you love TV and movies, then set up your treadmill and walk as you watch. Start slow and don't expect changes overnight. Find a buddy who will exercise with you and help keep you motivated. When you move around, you burn calories and help balance your blood sugar. If you don't move, the system falls further and further into disrepair.

Because I have been asked about this information so many times, I have outlined a meal plan

and an exercise program that is simple and effective. Look for **Terry's Menu for Health and Longevity** and **Terry's Exercise Plan** on my website at www.terrytalksnutrition.com.

The Right Supplements

There are natural herbs and minerals that have been clinically studied and proven to lower blood sugars and help bring the insulin system back into balance. There are ingredients that slow sugar absorption and help the insulin respond more normally to bring your blood sugar back to where it should be. I like to use these five ingredients in a formula, as they are mutually supportive.

First is an essential mineral called **Chromium** that has been shown in clinical studies to improve how the body handles blood sugar and insulin. In a study published in *Diabetes: the Journal of the American Diabetic Association* (R A Anderson, N Cheng, N A Bryden, et al. Elevated intakes of supplemental chromium improve glucose and insulin variables in individuals with Type 2 diabetes. *Diabetes*. 1997; 46(11): 1786-1791), it was found that chromium supplementation significantly improved fasting blood sugars and another blood test called hemoglobin A1c (HbA1c), an important indicator of insulin system balance. A good dose is at least 500 mcg a day.

Next is another mineral called **Vanadium**. It turns out that if your blood levels of vanadium are too low, you are likely to have more problems with high blood sugars. A dose of 1.5 mg a day can significantly raise blood levels of vanadium to a more optimal range.

Besides minerals, there are three herbs getting a lot of attention: **Mulberry leaf, Purslane, and Apple extract**.

Mulberry Leaf is More Effective than Glibenclamide

Type 2 diabetic patients treated with Mulberry therapy, an extract of dried leaves, significantly improved their glycemic control compared to glibenclamide (a drug) treatment. The fasting blood glucose after treatment with glibenclamide decreased by 8% and after Mulberry treatment decreased by 27%. Mulberry leaf extract was also more effective in controlling fasting blood glucose levels than the oral hypoglycemic drug glibenclamide in diabetic rats.



Mulberry leaf contains substances that inhibit an enzyme (alpha glucosidase) responsible for breaking down carbohydrates into sugars. That means absorbing these sugars is reduced and delayed, which lessens the stress on the insulin system. You have to make sure that the mulberry leaf extract is standardized for alpha glucosidase inhibition for it to be effective. Additional benefits of mulberry leaves in people with diabetes: reduces blood sugar in people with high blood sugars, possesses antioxidant activity, slows the onset of retinopathy (damage to the retina of the eye common in people with Type 2 diabetes), and curbs the desire for food under diabetic conditions.

Mulberry has been tested for safety, too. In one study, doctors gave Mulberry leaf extract to both healthy people and to people

with Type 2 diabetes. Neither group showed any significant adverse effects when following the recommended dosage.

Purslane

Purslane is an ancient herb discussed in Greek medical scripts, and was even mentioned in the book of Job in the Bible. Some experts call it "The best vegetable you've never had," because it is not well known, but enormously healthy.

When we eat, our body converts digestible carbohydrates into glucose (sugar), our main source of energy. With the help of insulin, a hormone made by the pancreas, sugar in the blood is transported into our body's cells where it is used for energy. In a clinical study of people with Type 2 diabetes, Purslane extract outperformed the placebo group by 44%, and HgA1c levels returned to normal ranges. In an observational study over five weeks, Purslane herb extract normalized blood glucose in individuals with elevated levels. The scientists note that Purslane is safe and well-tolerated.

In stabilizing blood glucose concentrations, purslane may help to control blood glucose-related appetite increases, and help protect the body from the negative effects of high blood sugar levels. Purslane is a multi-functional ingredient targeting maintenance of healthy blood sugar metabolism in weight management programs, and supporting blood sugar regulation in both pre- and Type 2 diabetes.

Purslane works in three ways to target diabetes. It helps the cell respond to insulin more favorably; it reduces sugar absorption from the intestine into the blood stream, and it helps move the sugars out of the blood and

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into the cells where they can be burned for fuel. I prefer a 7:1 extract, which means it takes 7 pounds of Purslane to make a pound of Purslane extract, as it is a more concentrated and effective form.

Apple

There is surely a lot of support for “An apple a day keeps the doctor away.” The **apple** is chock full of amazingly healthy nutrients. But there is a very special, uncommon apple that is rarely in cultivation, called the sour green cider apple. Most apples today are bred for taste and sweetness, but these little sour apples have a rare plant compound called phloridzin that has been shown to help lower blood sugars safely by impacting how carbohydrates are absorbed, lessening stress on the insulin system, and helping the body to better metabolize carbohydrates that have been converted to sugars. It can also impact cellular fat storage.



Another ingredient in apple is quercetin, which also influences how sugars are managed in the intestines. Quercetin is a wonderful antioxidant that is the subject of much medical study. For any apple extract you use, there should be standardization for phloridzin and quercetin for full effectiveness. Always check the label for this.

Because the ingredients in apple extract have such a healthy impact on moderating blood sugar, there are fewer peaks and valleys. The valleys in blood sugar levels cause you to be hungry, and sometimes to crave sweets or high carbohydrate foods. Some individuals also use sour green cider apple extract as part of a weight loss diet, and there are studies on this aspect of the extract as well. In one scientific study, it was shown that supplementation with this extract caused a shift in body mass—11% less fat and 5% more lean muscle, compared to the group with no apple extract.

More lean muscle is good for you for many reasons, but it is good for Type 2 diabetes because muscle burns more calories at rest than any other tissue in the body. This helps to maintain blood sugar balance and healthy weight. Two identical twins, each weighing 150 pounds, with the only difference being the percentage of fat vs. percentage of lean muscle in their bodies, can have vastly dif-

ferent health outcomes. The twin with more lean muscle can eat more calories each day without gaining weight because that twin burns more calories just by being alive.

Take Steps Now to Control Your Blood Sugar

Blood sugar issues and Type 2 diabetes don't improve on their own. You have to take active steps to change how your body interacts with the food you eat. By changing just 3 things—food choices, how much you move, and the right supplements, you can fight this potentially disabling and life-threatening illness. You have the power to take control and make a difference. Getting your blood sugar under control can add years to your life and give you many healthy tomorrows. TN

Terry recommends this formula at your local health food store:

Chromium (nicotinate glycinate 2.5%) 500 mcg,
Vanadium (as vanadyl sulfate) 1.5 mg
Proprietary Complex 1,280 mg
Mulberry leaf (*Morus alba*) Extract
standardized for Alpha Glucosidase
Inhibition IC50 (mcg/ml) < 50.0,
Purslane (*Portulaca oleracea L.*) Extract 7:1,
Apple (*Pyrus malus*) Extract standardized
for quercetin and phloridzin (40% phenolic
apple actives)

Terry's Menu and Exercise Plan

To learn about **Terry's Menu for Health and Longevity** and **Terry's Exercise Plan**, visit my website at www.terrytalksnutrition.com

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