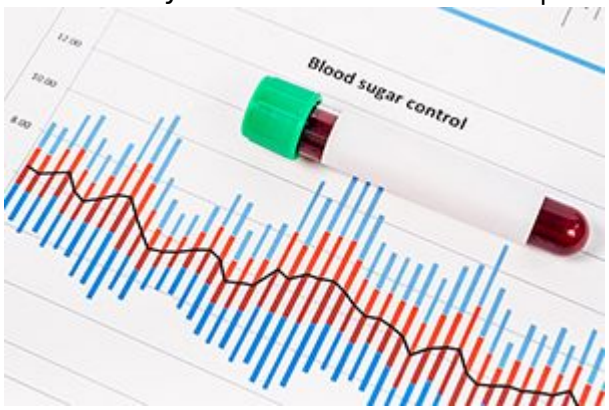
Maintaining healthy blood glucose levels with dietary supplements*

written by Celine Torres-Moon | October 14, 2019



Readers, here's an excellent review of the science behind some of the best researched-backed supplements for blood sugar optimization, from one of our sponsors, Protocol for Life Balance. While of specific interest to diabetics, keeping hemoglobin A1c under control for people without frank diabetes can help protect brain, heart, blood vessels, eyes and kidneys from accelerated degenerative processes.

Dr. Hoffman

This article contains sponsored content.

As employer-sponsored wellness programs become more common, consumers subsequently become more familiar with indicators of health status. One simple way to evaluate wellness is to test blood glucose and glycated hemoglobin (known as hemoglobin A1c, A1C, or HbA1c) levels. These tests are routinely performed to evaluate the body's ability to process carbohydrates. When the results of these tests are not optimal, teaming up with a healthcare practitioner to start a program is recommended to get blood sugar and A1C levels in line with personalized goals. If tests are within normal range, then actions to ensure that the body maintains healthy glucose metabolism can also be started.* In order to achieve this objective, working to maintain a healthy weight through diet and exercise is recommended.

For healthy individuals, in addition to a healthy diet and exercise regimen, supplements are great tools to support healthy blood sugar levels.* Many botanicals and micronutrients can be used to help us with healthy glucose metabolism.* Some, including chromium, berberine, banaba, and *Gymnema sylvestre*, have been well researched.

Chromium is probably the best known micronutrient involved in healthy glucose metabolism.* Chromium is an essential trace element widely found in nature, where it occurs in different forms: metallic, trivalent, and hexavalent chromium. Its trivalent form is the biologically active form found in foods

such as egg yolks, whole grain products, high-bran breakfast cereals, coffee, nuts, green beans, broccoli, meat, brewer's yeast, and dietary supplements.

In the United States, the recommended daily intake for chromium is 35 mcg, and the prevalence of chromium deficiency is typically rare. However, in some population subgroups, deficiency has been reported to be up to 40%, and chromium levels are known to decrease with age, which makes screening for chromium deficiency an important step when a person wants to make sure their chromium status is adequate for the support of healthy glucose metabolism.* (1, 2) Indeed, chromium is known to potentiate the action of insulin in the body, helping to activate insulin receptors present on insulin-dependent cells.* Acting as a cofactor for several enzymes involved in proper insulin function, chromium may enhance the binding of insulin to its receptor and may also increase the number of insulin receptors.* Chromium also assists in the process of insulin internalization and promotes beta-cell sensitivity.*

While the role of chromium as a key player in glucose metabolism is well established, effectiveness of chromium supplementation depends on its ability to reach insulin-sensitive cells in the body.* Laboratory studies have shown that not all forms of chromium are created equal when it comes to bioavailability. ChromeMate®, a Niacin-bound chromium, demonstrates better tissue retention than chromium picolinate or chromium chloride. To get the most out of your chromium supplement, it is best to first establish your chromium status through a blood test measuring your chromium level. With your test results in hand, you and your healthcare practitioner can establish the best dose and form of chromium for you.

In addition to chromium, several botanical supplements have been thoroughly studied for their roles in supporting glucose metabolism. For individuals who want added blood sugar metabolism support, or for those who prefer supplementing their diets with active compounds derived from plants, several options exist. Bioactive compounds extracted from plants such as *Berberis spp*., *Lagerstroemia speciosa* (banaba), and *Gymnema sylvestre* have been well studied for their ability to support a healthy blood glucose levels already within normal range.*

Berberine, is a plant alkaloid used in traditional Ayurvedic and Chinese herbalism. Berberine is an active constituent present in the root, rhizome, and stem bark of many plants, including *Hydrastis canadensis* (goldenseal), *Coptis chinensis* (Coptis or goldenthread), *Berberis aquifolium* (Oregon grape), *Berberis vulgaris* (barberry), and *Berberis aristata*. (3) Berberine is known for its numerous biochemical properties, including its ability to curb oxidative processes, to modulate cellular responses to normal biological stress, to interact with some enzymatic processes, and to modulate neurotransmission.* However, we will focus here on its ability to support healthy glucose metabolism.*

From laboratory experiments, we can infer that berberine assists the body in glucose metabolism by supporting healthy insulin sensitivity, insulin secretion, and cellular glucose consumption in the absence of insulin.* It has also been shown to interact with enzymes involved in glucose metabolism such as alpha-glucosidase and disaccharase, and may even limit the transport

of glucose across the intestinal epithelium.* Several clinical studies have confirmed the effect of berberine for the maintenance of healthy blood sugar within the normal range as well as for the support of healthy lipid metabolism.*

If you are interested in a berberine supplement, it is important to know that berberine typically has a low bioavailability. Therefore, the formulation of the supplement you are considering matters, and choosing one with enhanced absorption would be ideal. For example, Glucose Management by Protocol For Life Balance® has been formulated with medium-chain triglycerides to enhance berberine absorption.* Another useful tip when supplementing your diet with berberine is to divide the daily dose in three or four separate doses and to take it with food to limit the gastrointestinal discomfort that some people experience at the inception of supplementation.

Berberine is not the only plant-based compound that is useful for supporting healthy blood glucose levels.* Proprietary extracts from banaba and *Gymnema sylvestre* have also been isolated for this purpose.* GlucoFit® is an extract of the leaves of *Lagerstroemia speciosa* (banaba) that is standardized to a minimum of 18% corosolic acid. Banaba extracts and banaba's active constituent, corosolic acid, have been extensively studied in laboratory settings. The results of these preliminary investigations suggest that, among other actions, they may stimulate glucose uptake by adipocytes, enhance insulin receptor activation, and modulate the activation of some enzymes involved in glucose metabolism.* One of the advantages of corosolic acid is that a little goes a long way, as the minimum dose needed to support the maintenance of healthy blood sugar levels already within normal range is only 0.48 mg per day.* This small dose is perfect for formulating with other blood sugar regulators that will fit into one capsule or tablet.*

Another botanical proprietary extract that has demonstrated its ability to affect glucose metabolism is GS4 Plus®. This proprietary extract of the leaves of *G. sylvestre* is standardized to 25% gymnemic acid.* Data from laboratory experiments suggest that gymnemic acid and other compounds found in *Gymnema* extracts delay glucose absorption from the intestine into the blood and may also contribute to the stimulation of insulin production, the promotion of the regeneration of some specialized pancreatic cells, and may interfere with enzymes involved in glucose metabolism.* They also appear to affect sugar taste perception through the inactivation of specific receptors present on the tongue.* (4, 5)

For individuals interested in maintaining healthy blood sugars levels already within normal range there are many nutritional interventions available. When choosing a supplement to help support glucose metabolism, it is important to select from reliable brands using ingredients that have been clinically evaluated and are backed-up by solid scientific data. Protocol For Life Balance® is a brand of premium dietary supplements distributed by healthcare practitioners that offers several supplements formulated with well-researched proprietary ingredients to support healthy glucose metabolism.* Your healthcare practitioner can help you determine which supplement is best for your specific needs when it comes to the maintenance of healthy blood sugar levels already within the normal range.*

1. https://www.ncbi.nlm.nih.gov/pubmed/22462011
2. http://www.sciencedirect.com/science/article/pii/S0026049597901797
3. https://www.ncbi.nlm.nih.gov/pubmed/26092760
4. https://www.ncbi.nlm.nih.gov/pubmed/9152931
5. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3912882/