

Fasting Glucose

DNA Health Report

REPORT CATEGORY —



Sample Client

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DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg



How this works

Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



Similarly, our Trait Reports look at how your DNA influences your traits.



Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information.
We then summarize your results as a risk score or display it on a gauge.

In total, we analyze up to 83 million genetic variants.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

5 / 5

Recommendations that are considered effective and generally recommended by experts and medical bodies.

4 / 5

Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.

3 / 5

Recommendations that are considered possibly effective and have many studies supporting them

2 / 5

Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.

1 / 5

Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.

0 / 5

No evidence in humans.

Genotype-specific Evidence

High-quality

Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).

Medium-quality

Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).

Low-quality

Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).

Indirect

A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).

In theory

A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

Glucose is a type of sugar. **Fasting glucose –or fasting blood sugar – is the measurement of one's blood sugar level after 8-12 hours of avoiding food and drinks.**

Fasting glucose levels help show how your body deals with dietary sugar. Doctors may order a fasting glucose test to check if someone is diabetic. Fasting blood sugar levels can be in the following ranges [\[R\]](#), [\[R\]](#):

- **<100 mg/dL** indicates a person is unlikely to have diabetes
- **100-125 mg/dL** indicates that fasting glucose is high and the person may have prediabetes
- **>126 mg/dL** on two separate occasions indicates that a person may have diabetes

Symptoms of high blood sugar and diabetes are subtle when they first develop. People with elevated fasting glucose often do not notice symptoms. Screening for diabetes using fasting glucose testing may help catch these “silent” cases and prevent serious complications [\[R\]](#).

Experts recommend measuring fasting glucose to screen for diabetes to the following groups of high-risk people [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Pregnant women after 24 weeks of pregnancy
- Overweight or obese adults over the age of 40
- People with risk factors for diabetes such as high blood pressure or a family member with diabetes

Genetics of Fasting Glucose

Glucose is a type of sugar. **Fasting glucose –or fasting blood sugar – is the measurement of one's blood sugar level after 8-12 hours of avoiding food and drinks.** Fasting glucose levels help show how your body deals with dietary sugar. Doctors may order a fasting glucose test to check if someone is diabetic [\[R\]](#), [\[R\]](#).

Your fasting glucose levels are partly dependent on your genes! Up to 65% of differences in people’s fasting glucose levels may be attributed to genetics. Genes involved in fasting glucose may influence [\[R\]](#), [\[R\]](#):

- Pancreas development and function
- Insulin activity
- Glucose breakdown

Genetically high bioavailable testosterone levels may be causally associated with lower fasting glucose in men [\[R\]](#).

However, keep in mind that your diet and lifestyle may also contribute to your fasting glucose levels. If you have a genetic predisposition for higher fasting glucose levels, the following lifestyle changes may help [\[R\]](#):

- Exercising
- Maintaining a healthy weight
- Avoiding cigarette smoke and alcohol
- Following a healthy diet

Genetically higher glucose levels may play a role in [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Glaucoma
- Gum disease
- High blood sugar
- Heart health
- Heart attack
- Alzheimer’s



Predisposed to typical fasting glucose levels based on 959,749 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
TCF7L2	rs7903146	CT
SLC30A8	rs13266634	CC
GCKR	rs780093	CC
CDKN2A	rs10811661	TT
CETP	rs708272	AA
FOXO3	rs2802292	GG
PPARG	rs1801282	CC
PPARA	rs1800206	CC
RFC4	rs17300539	GG
MRPS31	rs10507486	GG
ADCY5	rs11708067	AA
BCL2	rs12454712	TT
HMGA2	rs2261181	TC
IMPDH1	rs791595	AG
TNF	rs2857605	TC
SLC38A11	rs10195252	TC
TSPAN3	rs7177055	GA
DGKB	rs2191349	GT
PPARGC1A	rs8192678	TC
UCP2	rs659366	CT
ADRB2	rs1042714	GC
ADRB2	rs1042713	GA
CRY2	rs11605924	AC
IGF2BP2	rs1470579	AC
CCND2	rs76895963	TT
CDKAL1	rs7756992	AA
FTO	rs9939609	TT
MC4R	rs12970134	GG
JAZF1	rs1635852	CC
TAP2	rs2071479	CC
SLC2A2	rs5400	GG
FCER1G	rs5082	AA

GENE	SNP	GENOTYPE
IRS1	rs2943641	TC
DIO2	rs225014	TT
IRS1	rs1801278	CC
TNF	rs1800629	GG
FABP2	rs1799883	CC
GIPR	rs10423928	TT
KCNJ11	rs5215	TT
/	rs184660829	TT
/	rs569511541	AA
/	rs555402748	CC
/	rs562386202	AA
/	rs543786825	CC
/	rs759111467	GG
CCDC68	rs76197067	AA
RNASEH2A	rs755734872	CC
NEDD1	rs557027608	GG
/	rs533172266	CC
QSER1	rs528122639	GG

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You’ll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

		DOSAGE			DOSAGE
1	Methylfolate	400 mcg	2	Chickpeas	
3	Low-Carbohydrate Diet		4	Black Seed Oil	2 tsp
5	Black Seed (Black Cumin)	1000 mg	6	Paleo Diet	
7	Vitamin C	500 mg	8	Pistachios	
9	Glucomannan	3 g	10	Keto Diet	
11	Apple Cider Vinegar		12	Amla	
13	Beta-Glucans		14	Gymnema	200 mg
15	Goji Berries		16	Resistant Starch	40 g
17	Hazelnuts		18	Glutamine	5 g
19	Resveratrol	150 mg	20	Tart Cherries	
21	Green Coffee Extract	400 mg	22	Artichoke	
23	Strength Training	1 hour	24	Vanadium	
25	Magnesium	250 mg	26	Genistein	30 mg
27	Barberry	500 mg	28	Oats	
29	Maintain Optimal Vitamin D Levels	1000 iu	30	Curcumin	500 mg
31	Cocoa		32	Berberine	1000 mg

33	Avoid Perchlorate		34	Oyster Mushroom	600 mg
35	Tocotrienols	100 mg	36	L-Carnitine	500 mg
37	Garlic Supplement	200 mg	38	Biotin And Chromium Picolinate	
39	Magnesium Chloride	200 mg	40	Astaxanthin	12 mg
41	Yacon		42	Passion Fruit Flour	30 g
43	Honey		44	Intermittent Fasting	
45	Poria		46	Stinging Nettle	300 mg
47	Kimchi		48	Whole-Body Vibration	15 minutes
49	Bitter Melon Supplement	500 mg	50	Jujube	250 mg
51	Broccoli Sprouts	2 tbsp	52	Chlorella	3 g
53	Probiotic Yogurt		54	Vitamin D and Calcium	
55	Jiaogulan (Gynostemma Pentaphyllum)	1350 mg	56	Lycopene	10 mg
57	Cranberry		58	Cumin	500 mg
59	Strawberries		60	Decaffeinated Coffee	
61	Avoid Phthalate Exposure		62	Coenzyme Q10 (CoQ10)	100 mg
63	Alpha-Lipoic Acid	100 mg	64	Probiotics	30 billion CFU
65	Allulose	30 g	66	Alpha-Linolenic Acid (ALA)	
67	American Ginseng	200 mg	68	Black Chokeberry	
69	Celery Seed	600 mg	70	Rutin	
71	Lactobacillus Casei	10 billion CFU	72	Quercetin	200 mg

73	Avoid Lead Exposure		74	Diaphragmatic Breathing	10 minutes
75	Perilla Oil	600 mg	76	Sage Extract	300 mg
77	Yoga Nidra	30 minutes	78	Neem	300 mg
79	Avoid Acrylamide		80	Chicory	
81	Hatha Yoga	1 hour	82	Restorative Yoga	30 minutes
83	Carnosine	1000 mg	84	Aerobic Exercise (Cardio)	1 hour
85	Ecklonia Cava	100 mg	86	Bananas	
87	Mastic Gum	350 mg	88	Dragon Fruit	
89	Laughter Therapy	30 minutes	90	L-Citrulline	3 g
91	Fucoidan	300 mg	92	Okra	
93	Hyperbaric Oxygen Therapy	90 minutes	94	Figs	
95	Fasting Mimicking Diet		96	Bacillus Clausii	
97	Beta-Alanine	2 g	98	Myo-inositol	4 g
99	Brown Seaweed And Bladderwrack	500 mg	100	Ursolic Acid	150 mg
101	Celery Leaf Extract	500 mg	102	Brown Seaweed	500 mg
103	Inositol	2 g	104	Red Clover	40 mg
105	Banaba	32 mg	106	Lactobacillus Acidophilus NCFM	10 billion CFU
107	Brewer's Yeast		108	Bergamot	
109	Walking Meditation	30 minutes	110	Saffron	20 mg
111	Colostrum	20 g	112	Jackfruit	

113	Amaranth		114	Mangosteen and Sphaeranthus Indicus	
115	Biotin	30 mcg	116	Cinnamon	1 g
117	Chromium	200 mcg	118	Broccoli	
119	Bladderwrack	300 mg	120	Quinoa	
121	Dietary Zinc		122	Berries	
123	Salmon		124	Calcium Supplements	1000 mg
125	Vegetables		126	Agmatine	1 g
127	Whole Grains		128	Legumes	
129	DHEA (Dehydroepiandrosterone)	25 mg	130	Exercise At Least One Hour a Day	1 hour
131	Barley		132	Oat Bran	
133	Brown rice		134	Geranylgeraniol	150 mg
135	Sulforaphane	30 mg	136	Sleep for 7+ Hours	
137	Fenugreek	500 mg	138	Regular Sleep Schedule	
139	Almonds		140	Avocado	
141	Chia Seeds		142	Avoid Alanine Supplements	

1



Methylfolate

IMPACT

4 / 5

EVIDENCE

3 / 5

How to implement

Take an L-methyl folate supplement (400-800 micrograms daily), ideally with a meal, to improve absorption. This dosage is recommended for adults, including pregnant women, to support overall health, especially to reduce the risk of neural tube defects in developing fetuses. Continue daily use as part of your regular supplement routine.

TYPICAL STARTING DOSE

400 mcg

Description

Folate, a B-vitamin, is crucial for DNA synthesis, cell growth, and the formation of red blood cells. Adequate folate intake supports overall health and reduces the risk of neural tube defects during pregnancy.

[Vitamin B9](#) (*folate*) plays an essential role in [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Making DNA
- Metabolism
- Energy production

SelfDecode recommends L-methylfolate as the preferred folate supplement for those who need one. It is superior to folic acid because it doesn't require activation, but the research is still ongoing [\[R\]](#), [\[R\]](#).

How it helps

Folate helps control levels of homocysteine, a substance linked to heart disease and higher fasting glucose levels. By lowering homocysteine, folate may improve insulin resistance, helping to prevent an increase in fasting glucose.

Three meta-analyses (the largest one with 29 trials and 22,250 participants) concluded that supplementation with folate (typically, 0.8-10 mg/day for 4-12 weeks) **lowers fasting glucose (by 0.15 mmol/L or 2.17 mg/dL), HOMA-IR (by 0.40-0.83 units), and fasting insulin (by 1.94 µIU/mL or 1.63-13.47 pmol/L), but not HbA1c** [\[R\]](#), [\[R\]](#), [\[R\]](#).

A meta-analysis of 16 studies and 763 patients with metabolic diseases found that folate supplementation **lowers insulin and HOMA-IR but not fasting glucose or HbA1c** [\[R\]](#).

2



Chickpeas

IMPACT

4 / 5

EVIDENCE

3 / 5

How to implement

Incorporate chickpeas into your diet by adding them to salads, soups, and stews, or by making hummus. Aim for at least a half-cup serving, 3-4 times a week.

Description

Chickpeas, also known as garbanzo beans, are a good source of fiber, protein, and various vitamins and minerals. They can promote digestive regularity, provide sustained energy, and contribute to overall well-being when included in a balanced diet.

Chickpeas are a good source of minerals like manganese, iron, copper, zinc, and phosphorus, as well as folate and fiber. A ½ cup serving provides 0.9 mg of manganese or 39%DV.

How it helps

Chickpeas are high in fiber and low in glycemic index, which helps regulate blood sugar levels by slowing down glucose absorption into your bloodstream. Regular consumption may, therefore, prevent spikes in fasting glucose and help in its management.

In multiple non-placebo-controlled trials involving healthy individuals, chickpea consumption or chickpea-enriched products consistently showed benefits in glycemic control. This included reduced postprandial glucose levels, improved insulin responses, and lowered insulin resistance [[R](#), [R](#), [R](#), [R](#), [R](#), [R](#), [R](#), [R](#), [R](#), [R](#)].

3



Low-Carbohydrate Diet

IMPACT

3 / 5

EVIDENCE

5 / 5

How to implement

Limit your daily intake of carbohydrates to less than 26% of your total daily calories. For a standard 2000-calorie diet, this means consuming no more than 130 grams of carbohydrates per day. Focus on including non-starchy vegetables, lean proteins, and healthy fats in your meals while minimizing the intake of sugars, bread, pasta, and other high-carb foods.

Description

Low-carbohydrate diets can promote weight loss, improve blood sugar control, and support heart health. They may also be beneficial for individuals with certain medical conditions, such as epilepsy or metabolic syndrome.

How it helps

A low-carb diet limits your intake of sugars, including those found in grains, fruits, and dairy, which directly affects your blood sugar levels. By reducing the amount of carbs you eat, you lower your blood sugar and insulin levels, which helps manage or even prevent high fasting glucose.

A [meta-analysis of 18 studies](#) found that **carbohydrate intake within the recommended 45–65% of calorie intake doesn’t affect type 2 diabetes risk, but intakes above 70% of calories increase the risk by 18%** [\[R\]](#).

In the case of metabolic syndrome, the highest vs the lowest category of carbohydrate intake **increases the risk by 25%** according to a [meta-analysis of 14 studies](#) [\[R\]](#).

Nine [meta-analyses](#) concluded that carbohydrate-restricted diets (50-130 g/day for 3-12 months) **reduce HbA1c (by 1-6.7 mmol/L or 0.17-0.49%) with a dose-dependent effect in patients with type 2 diabetes**. In one of them, it also **reduced fasting plasma glucose (by 0.34 mmol/L)** [\[R, R, R, R, R, R, R, R, R\]](#).

Three [meta-analyses](#) comparing different dietary approaches in people with prediabetes and type 2 diabetes concluded that a **low-carb diet was the most effective one for decreasing BMI and raising HDL-c and one of the most effective ones (together with the Mediterranean diet) for lowering HbA1c** [\[R, R, R\]](#).

Compared to low-fat diets, low-carb diets are **more effective at raising HDL-c and reducing HbA1c and weight in type 2 diabetes patients** according to [2 meta-analyses](#) [\[R, R\]](#).

In patients with metabolic syndrome, low-carb diets **lower insulin levels** according to a [meta-analysis of 13 trials](#) [\[R\]](#).

A [meta-analysis of 17 trials](#) associated low-carb diets with **lower fasting glucose (by 1.05 mg/dL), HbA1c (by 0.21%), and insulin (by 2.25 mIU7mL)** [\[R\]](#).

 PERSONALIZED TO YOUR GENES

Women with your [AMY1A](#) gene variant may have an increased risk of type 2 diabetes if they eat a diet high in carbohydrates [\[R\]](#).

Women with your [AMY1A](#) gene variant may have an increased risk of type 2 diabetes if they eat a diet high in carbohydrates [\[R\]](#).

YOUR GENETIC VARIANTS			
GENE	SNP	GENOTYPE	EVIDENCE
AMY1B	rs6696797	AA	
AMY2B	rs4244372	AT	

4



Black Seed Oil

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take one to two teaspoons (5-10ml) of black seed oil twice daily, preferably before meals. For capsule forms, follow the manufacturer's instructions, commonly 500mg capsules twice daily. Continue this regimen for up to 8 weeks to evaluate its effects.

TYPICAL STARTING DOSE

2 tsp

Description

Both black seed extract and black seed oil have been traditionally used for their potential health benefits, including anti-inflammatory and antioxidant properties. They may support overall wellness and immune function when incorporated into a balanced diet.

[Black seed](#) (black cumin) and its oil are used in cooking and traditional medicine [\[R\]](#).

People mainly use black seed for [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Allergies
- Joint pain

How it helps

Black seed oil is believed to help lower fasting glucose levels because it contains thymoquinone, a compound that enhances insulin production and sensitivity. This way, it may combat high blood sugar levels and mitigate symptoms of glucose intolerance.

Two meta-analyses (the largest one with 50 studies) concluded that supplementation with black seed **lowers fasting glucose (by 9.93-15.18 mg/dL), postprandial blood glucose (by 14.79 mg/dL), and HbA1c (0.45-0.57%). Black seed oil was found more effective than black seed powder** in one of them [\[R\]](#), [\[R\]](#).

A meta-analysis of 7 studies found that supplementation with black seed **lowers fasting blood glucose (by 17.84mg/dL) and HbA1c (by 0.71%)** in people with type 2 diabetes [\[R\]](#).

5



Black Seed (Black Cumin)

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take 1000 mg of black seed (black cumin) supplement daily, preferably split into two doses of 500 mg each, one in the morning and one in the evening.

TYPICAL STARTING DOSE

1000 mg

Description

Black seed, also known as black cumin or *Nigella sativa*, has been used for its potential health benefits in traditional medicine. It is believed to have anti-inflammatory, antioxidant, and immune-boosting properties.

[Black seed](#) (black cumin) and its oil are used in cooking and traditional medicine [\[R\]](#).

People use black seed for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Asthma
- Allergies
- High blood sugar
- High blood pressure
- Joint pain

How it helps

Black seed is believed to help lower fasting glucose levels because it contains thymoquinone, a compound that enhances insulin production and sensitivity. This way, it may combat high blood sugar levels and mitigate symptoms of glucose intolerance.

[Two meta-analyses \(the largest one with 50 studies\)](#) concluded that supplementation with black seed **lowers fasting glucose (by 9.93-15.18 mg/dL), postprandial blood glucose (by 14.79 mg/dL), and HbA1c (0.45-0.57%). Black seed oil was found more effective than black seed powder** in one of them [\[R\]](#), [\[R\]](#).

A [meta-analysis of 7 studies](#) found that supplementation with black seed **lowers fasting blood glucose (by 17.84mg/dL) and HbA1c (by 0.71%)** in people with type 2 diabetes [\[R\]](#).

6

Paleo Diet

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Adopt a diet that includes lean meats, fish, fruits, vegetables, nuts, and seeds, resembling the diet of our hunter-gatherer ancestors. Exclude all dairy products, legumes, grains, added sugar, and processed foods. This should be a consistent dietary approach, not a short-term diet, to observe its benefits on health and well-being.

Description

The paleo diet, also known as the caveman diet, emphasizes whole foods such as lean meats, fish, fruits, vegetables, nuts, and seeds while excluding processed foods, grains, and dairy. It is believed to support weight management and reduce the risk of chronic diseases by focusing on foods more in line with our ancestors' diets.

How it helps

The Paleo diet may reduce blood sugar levels by improving insulin sensitivity.

Multiple studies and meta-analyses showed that the Paleo diet has a positive impact on blood glucose control. In a meta-analysis of 4 trials and 159 participants with metabolic syndrome, the Paleo diet lowered fasting glucose levels by 0.16 mmol/L more than guideline-based control diets. Another meta-analysis of 21 studies comparing various diets found that the Paleo diet had a stronger short-term effect on fasting glucose, with only this diet showing long-term improvements. A non-placebo-controlled trial of 69 participants also demonstrated reduced fasting glucose levels after following a Paleo diet for 10 weeks [\[R, R, R\]](#).

7



Vitamin C

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take 500-2000 mg of vitamin C supplement daily. It can be taken at any time of the day, with or without food, according to personal preference or tolerance.

TYPICAL STARTING DOSE

500 mg

Description

[Vitamin C](#) is an essential nutrient. This means that our bodies can’t produce it on their own, so we have to get it from food or supplements [\[R\]](#).

Foods rich in Vitamin C include: [\[R\]](#)

- Citrus Fruits
- Peppers
- Brussel sprouts
- Kiwi
- Broccoli
- Tomato
- Cantaloupe
- Cauliflower
- Spinach

Vitamin C has antioxidant properties. It supports immunity, heart health, and wound healing [\[R\]](#), [\[R\]](#).

Vitamin C deficiency is called *scurvy*. In the past, many sailors suffered from it [\[R\]](#).

How it helps

Vitamin C can help with fasting glucose because it improves your cells' response to insulin, which is the hormone that controls your blood sugar levels. By making your body more sensitive to insulin, vitamin C can help prevent high fasting glucose, which is a common precursor to diabetes.

Three meta-analyses (the largest one with 28 studies and 1,574 participants) concluded that supplementation with vitamin C **lowers HbA1c (by 0.54%) and fasting glucose (by 0.44 mmol/L), especially in people with type 2 diabetes and in interventions longer than 30 days** [\[R\]](#), [\[R\]](#), [\[R\]](#).

However, vitamin C (both alone and combined with vitamin E) **doesn’t improve insulin sensitivity** according to a meta-analysis of 14 trials and 735 patients with type 2 diabetes [\[R\]](#).

Genetically lower vitamin C levels may raise the risk for hyperglycemia and metabolic syndrome (MR):

- High Blood Sugar [\[R\]](#).

In conclusion, insufficient dietary VC intake potentially increased the MetS and hyperglycemia risk in Asian adults.

Null (MR): *Type 2 Diabetes* [\[R\]](#).

Please note: *Supplementing with vitamin C is linked to a slightly higher risk of kidney stones in men. Talk to your doctor before taking vitamin C* [\[R\]](#), [\[R\]](#).

8



Pistachios

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate a handful of pistachios (about 1-2 ounces) into your daily diet. You can add them to your breakfast cereals, salads, or simply snack on them throughout the day. Do this regularly for ongoing heart health benefits and to aid in maintaining a balanced diet.

Description

Pistachios are a type of nut native to Asia but grown extensively in the Mediterranean. They are packed with healthy fats, fiber, protein, and various vitamins and minerals, like vitamins C, B6, and E, as well as potassium, copper, and iron. They are also rich in antioxidant and anti-inflammatory compounds, which can help lower cholesterol levels and support weight management.

The pistachio (*Pistacia vera L*), known as **the “green nut”**, is a nut native to Asia but widely cultivated in the Mediterranean. Pistachios have **low fat content** and high levels of [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Unsaturated fats
- Vitamins (C, B6, E, K, thiamin)
- Minerals (Potassium, copper, iron, and magnesium)

Pistachios also have a high **antioxidant and anti-inflammatory** effect [\[R\]](#).

How it helps

Pistachios are rich in fiber and healthy fats, which can help regulate your blood sugar levels by slowing down the digestion of carbohydrates in your body. This slower digestion prevents sudden peaks and troughs in your blood glucose levels, helping manage fasting glucose.

Four meta-analyses (the largest one with 17 studies) concluded that consuming pistachios lowers fasting glucose (by 3.62-5.32 mg/dL), insulin (by 1.86 µIU/mL), insulin resistance, and HbA1c. However, the results were mixed for insulin resistance and HbA1c [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

9



Glucomannan

IMPACT3 / 5

EVIDENCE3 / 5

How to implement

Take 1 gram of glucomannan powder with 8 ounces of water, 15 minutes to 1 hour before each meal, three times daily. It's essential to drink plenty of water when taking glucomannan to ensure it reaches the stomach and expands, helping to promote a feeling of fullness.

TYPICAL STARTING DOSE

3 g

Description

Glucomannan is a dietary fiber derived from the root of the konjac plant and is often used as a weight loss supplement. It may promote feelings of fullness and support weight management when used in conjunction with a balanced diet.

How it helps

A meta-analysis of 14 studies and 531 participants found that supplementation with glucomannan lowers fasting glucose by 7.44 mg/dL [\[R\]](#).

In patients with type 2 diabetes, glucomannan reduces fasting glucose, postprandial glucose, fasting insulin, fructosamine, total cholesterol, and LDL cholesterol according to a meta-analysis of 6 trials and 440 participants [\[R\]](#).

Glucomannan may help by slowing the absorption of sugar and reducing blood sugar levels after meals.

10



Keto Diet

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Adopt a diet that consists of about 70-80% fat, 10-20% protein, and 5-10% carbohydrates. Eliminate or significantly reduce the intake of sugar and starches like bread, pasta, rice, and potatoes, focusing instead on high-fat foods like meats, fatty fish, eggs, butter, and healthy oils, as well as low-carb vegetables like leafy greens. This dietary pattern should be maintained consistently for a period of at least 3-4 weeks to achieve ketosis, after which it can be adjusted based on individual goals and responses.

Description

The keto diet is a high-fat, low-carbohydrate eating plan designed to induce a state of ketosis in the body, where it primarily burns fat for energy. It is often used for weight loss and managing certain medical conditions.

The ketogenic diet, or the ‘keto’ diet, is rich in fat and restricts carb intake [\[R, R\]](#).

On the ketogenic diet, 50 g of carbs or less are consumed per day. Around 55-80% of the calories come from fat [\[R\]](#).

The ketogenic diet depletes the body of sugars like glucose. When people fast or eat very little carbs, the body makes less insulin. In response, the body starts using fat for energy.

When the body only uses fat for energy, molecules called ketones are formed. This state is called *ketosis*.

The ketogenic diet may help with:

- Seizures [\[R\]](#)
- Excess weight [\[R\]](#)
- Diabetes [\[R, R\]](#)

How it helps

The Keto Diet, high in fats and low in carbs, forces your body to use fat instead of glucose for energy. This can help control blood glucose levels and potentially reduce your fasting glucose.

A meta-analysis of 14 studies concluded that eating a ketogenic diet lowers fasting glucose by 1.29 mmol/L in patients with type 2 diabetes. Another meta-analysis found that ketogenic diets lower fasting glucose by 5.22 mg/dL in overweight and obese individuals [\[R, R\]](#).

11



Apple Cider Vinegar

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate 1-2 tablespoons of apple cider vinegar into your diet daily by diluting it in a large glass of water. Consume this mixture before meals to potentially benefit from its effects.

Description

Apple cider vinegar is a fermented liquid made from crushed apples and is known for its potential health benefits. It is rich in acetic acid and may aid in weight management, improve digestion, and help regulate blood sugar levels, often used as a natural remedy for various conditions like acid reflux and insulin resistance.

[Vinegar](#) is often used in cooking to add sour flavor and to preserve foods through pickling. Some people also use vinegar for cleaning [\[R\]](#).

Apple cider vinegar is one of the most common vinegars produced from apples. As a health food, apple cider vinegar may help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Reduce blood sugar
- Lower cholesterol
- Fight infections

How it helps

Apple cider vinegar can aid in lowering fasting glucose levels as it is thought to reduce the speed at which food leaves your stomach and enters your lower digestive tract, slowing the absorption of sugar into your bloodstream. As a result, your body has more time to pull sugar out of your blood, preventing your sugar levels from spiking.

A meta-analysis of 9 studies concluded that consuming apple cider vinegar lowers fasting glucose by 7.97 mg/dL in people consuming it for over 8 weeks. However, it seems to increase fasting glucose in apparently healthy people. Similarly, a meta-analysis of 44 trials and 3130 participants analyzing different herbal remedies for type 2 diabetes identified apple cider vinegar as the most effective one for lowering fasting glucose in people with this condition [\[R\]](#), [\[R\]](#).

12



Amla

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate 1-2 teaspoons (approximately 4-8 grams) of amla powder into your daily diet. You can mix it into a glass of water, blend it into a smoothie, or sprinkle it over salads or cooked meals. Do this consistently every day for best results.

Description

Amla, also known as Indian gooseberry, is a fruit known for its high vitamin C content and antioxidant properties. It is used in traditional Ayurvedic medicine for various health benefits, including immune support and skin health.

How it helps

Amla, or Indian gooseberry, is rich in vitamin C and antioxidants that can help lower blood sugar by improving pancreatic function and increasing insulin secretion. This can lead to lowered fasting glucose levels and improved glucose metabolism.

Two meta-analyses (the largest one with 9 trials) concluded that supplementation with amla (500-1500 mg/day for 14-84 days) **lowers fasting glucose** [\[R, R\]](#).

13



Beta-Glucans

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take a beta-glucan supplement daily, with a dosage ranging from 250mg to 500mg. It is best consumed with a meal to enhance absorption. Continue this routine daily to support immune health.

Description

Beta-glucans are types of soluble fiber found in foods like oats and barley. They have been associated with immune system support and may help lower cholesterol levels when consumed as part of a heart-healthy diet.

Beta-glucan is a type of soluble fiber with antioxidant properties. It is abundant in [\[R\]](#) [\[R\]](#):

- Baker's yeast
- Cereals (e.g., oats, barley)
- Mushrooms (e.g., maitake)
- Seaweeds

People use beta-glucans to [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#):

- Improve immunity (e.g., fight infections)
- Reduce blood sugar
- Reduce cholesterol

How it helps

Beta-Glucans supplements can help lower blood sugar levels which is beneficial when fasting glucose is high, indicating prediabetes. It does this by slowing down food transit in the intestines, limiting sugar absorption and creating a more gradual increase in blood sugar.

A [meta-analysis of 126 studies](#) concluded that supplementation with beta-glucans **lowers fasting glucose by 2.58 mmol/L** but warned about the **high heterogeneity** of the studies. Another [meta-analysis \(103 trials\)](#) found that adding beta-glucans to carbohydrate-containing meals **lowers glycemic and insulinemic responses by approximately 25%** [\[R\]](#) [\[R\]](#).

In diabetic patients, beta-glucans (6 g/day for 4 weeks or lower doses for 12 weeks) **lowers fasting glucose (by 0.52 mmol/L) and HbA1c (by 0.21%)** according to [2 meta-analyses \(the largest one with 10 studies\)](#) [\[R\]](#) [\[R\]](#).

In hypercholesterolemic subjects, beta-glucan supplementation **lowers fasting glucose (by 0.05 mmol/L) and fasting insulin (0.75 pmol/L)** according to a [meta-analysis of 12 trials and 603 participants](#) [\[R\]](#).

14



Gymnema

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take a gymnema supplement containing 200 to 400 mg of gymnemic acids daily, ideally with a meal to potentially aid in reducing sugar absorption in the intestines. The duration can vary, but many users incorporate it into their daily routine for several months to assess its effects on blood sugar levels and cravings for sweets.

TYPICAL STARTING DOSE

200 mg

Description

Gymnema is an herb used in traditional medicine for its potential to support blood sugar control. Some studies suggest it may have benefits for individuals with diabetes, but it's important to consult with a healthcare provider before using it as a supplement.

[Gymnema](#) (*Gymnema silvestris*), also known as cowplant, gurmar, or periploca of the woods, is a plant originally from India. In Ayurvedic medicine, it is known as meshashringi or “the destroyer of sugar” because it temporarily **reduces the taste of sugar** on the tongue [\[R\]](#), [\[R\]](#).

It is traditionally used for [\[R\]](#), [\[R\]](#):

- Diabetes
- Weight loss
- High cholesterol

How it helps

Two separate meta-analyses (the largest one with 16 studies and 419 patients with type 2 diabetes) suggest that *Gymnema sylvestre* supplementation can lower fasting glucose (by 1.57 mg/dL). However, there were concerns about study heterogeneity, low quality, and limited participant diversity in these findings [\[R\]](#), [\[R\]](#).

Gymnema contains chemicals that decrease the absorption of sugar from the intestines. Over time, this may contribute to a decrease in blood sugar levels.

15



Goji Berries

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate goji berries into your daily diet by adding a handful (about 1 ounce or 28 grams) to your morning cereal, yogurt, or smoothie. You can also snack on dried goji berries throughout the day. Aim to include them in your diet consistently for at least a month to observe potential health benefits.

Description

Goji berries are a nutritious fruit known for their high antioxidant content. They may support immune health, provide essential nutrients, and be incorporated into a healthy diet as a snack or ingredient.

How it helps

Goji berries contain antioxidants like polysaccharides, which can help in reducing blood glucose levels. Consequently, regular consumption can help manage Fasting Glucose as it can balance glucose levels while fasting.

A meta-analysis of 7 trials concluded that the daily consumption of goji berry polysaccharide lowers triglyceride, fasting glucose, and LDL cholesterol while increasing HDL cholesterol. Another meta-analysis (7 trials and 548 participants) concluded that goji berries lower fasting glucose (by 0.36 mmol/L) and marginally reduce the concentrations of total cholesterol (by 0.30 mmol/L) and triglycerides (by 0.20 mmol/L). The most recent meta-analysis (10 studies) found that consuming goji berries (especially if eaten whole) lowers triglycerides (by 0.14 mmol/L) and increases HDL cholesterol (by 0.06 mmol/L) [[R](#), [R](#), [R](#)].

16



Resistant Starch

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate 40g of Jo's resistant starch into your daily diet. This can be done by adding it to smoothies, yogurt, or baked goods. Ensure to spread the intake throughout the day for better tolerance.

TYPICAL STARTING DOSE

40 g

Description

Resistant starch is a type of starch that resists digestion in the small intestine, making it a prebiotic fiber that can benefit gut health. It can be found in foods like green bananas, legumes, and certain grains.

[Resistant starch](#) is starch that doesn't get digested in the small intestine [\[R\]](#) [\[R\]](#).

Some types of resistant starch include [\[R\]](#):

- **Type 1** occurs naturally in foods such as whole grains
- **Type 2** can be isolated from foods such as corn and green banana
- **Type 3** is created during the cooking and cooling process of starchy foods like potatoes

Resistant starch doesn't increase blood sugar like typical digestible starches do [\[R\]](#) [\[R\]](#).

Instead, it feeds good bacteria in the colon that [\[R\]](#) [\[R\]](#):

- Support healthy gut function
- Support immunity
- Reduce inflammation

How it helps

Four meta-analyses (the largest one with 36 studies and 982 participants) concluded that supplementation with resistant starch (typically, 10-40 g/day for 4-12 weeks) **lowers fasting glucose in people with overweight/obesity, type 2 diabetes, or metabolic syndrome** [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#).

17



Hazelnuts

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate a handful of hazelnuts (about 1 ounce or 28 grams) into your diet daily. You can eat them as a snack, sprinkle chopped hazelnuts over salads, or use hazelnut butter in smoothies. Ensure they are unsalted to keep your sodium intake low.

Description

Hazelnuts are a nutrient-dense nut rich in healthy fats, fiber, and essential vitamins and minerals. Incorporating hazelnuts into your diet can support heart health, provide energy, and contribute to overall nutritional wellness.

Hazelnuts are a good source of manganese, magnesium, as well as being really good for vitamin E, B6, and healthy fats. A 1-ounce serving provides 1.6 mg of manganese or 70%DV.

How it helps

Hazelnuts are rich in healthy fats and dietary fiber, which can aide in stabilizing your blood sugar levels by slowing digestion and preventing glucose spikes. Additionally, they have a low glycemic index meaning they won't significantly raise your blood sugar levels, helpful for managing fasting glucose levels.

A meta-analysis of 15 trials and 667 participants concluded that consuming hazelnuts reduces fasting glucose (by 0.90 mmol/L) [\[R\]](#).

18



Glutamine

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take 5 to 10 grams of glutamine powder, mixed with water or another beverage, daily. It can be divided into two servings, one in the morning and the other in the evening. This supplementation is generally considered safe for long-term use, but it's best to consult with a healthcare provider for personalized advice.

TYPICAL STARTING DOSE

5 g

Description

Glutamine is an amino acid that plays a role in various bodily functions, including immune support and gut health. It may help with muscle recovery and overall well-being, particularly for individuals engaging in strenuous exercise.

L-glutamine is an amino acid produced by the body. Its levels may decrease during periods of stress or illness. It is important for protein and energy production, and helps control kidney pH balance [\[R\]](#).

Some people take L-glutamine as a supplement to help with [\[R\]](#):

- Gut health
- Immunity
- Exercise recovery and muscle performance
- Brain health

How it helps

Glutamine, when taken as a supplement, can help lower fasting glucose levels as it stimulates the release of glucagon-like peptide-1, a hormone that boosts insulin secretion. Therefore, it could potentially improve your body's sensitivity to insulin and support better blood sugar control.

A meta-analysis of 12 studies concluded that supplementation with glutamine lowers fasting blood glucose. Glutamine (10 g, 3x/day for 6 weeks) may also decrease fasting glucose in people with type 2 diabetes, as seen in a placebo-controlled trial of 66 patients [\[R, R\]](#).

In 4 placebo-controlled trials of 13 patients with type 2 diabetes, supplementation with glutamine (30 g/day) for up to 6 weeks lowered HbA1c, body fat, body mass, waist circumference, postprandial glucose while increasing postprandial insulin, GLP-1, GIP, and insulin [\[R, R, R, R\]](#).

19



Resveratrol

IMPACT3 / 5

EVIDENCE3 / 5

How to implement

Take 150-500 mg of resveratrol as a supplement daily, preferably with meals to enhance absorption. This dosage range is based on studies for various health benefits, and it's advised to not exceed 500 mg per day without medical supervision.

TYPICAL STARTING DOSE
150 mg

Description

Resveratrol is a natural compound found in red grapes, red wine, and some berries. It is known for its potential antioxidant properties and its role in promoting heart health.

[Resveratrol](#) is an antioxidant found mainly in [\[R\]](#):

- Berries
- Red grapes
- Red wine
- Peanuts

It’s purported to have anti-inflammatory and antioxidant effects [\[R, R, R\]](#).

How it helps

Meta-analyses reveal that resveratrol supplementation can positively impact glycemic control. It may lower fasting glucose levels (by 4.77 mg/dL), especially in doses of at least 500 mg/day and interventions lasting at least 10 weeks. In individuals with diabetes, it may reduce fasting glucose (by 7.97 mg/dL), insulin, HbA1c, and insulin resistance, with larger doses (at least 1000 mg/day) showing more significant effects. In those with type 2 diabetes already on hypoglycemic therapy, resveratrol may also lower fasting glucose and insulin levels [\[R, R, R, R, R\]](#).

Resveratrol can influence insulin secretion and sensitivity, which may help regulate fasting blood glucose levels.

20



Tart Cherries

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Consume about 200 grams (7 ounces) of tart cherries or drink 240 ml (8 ounces) of tart cherry juice daily. This can be done at any time of the day but consuming it in the evening might improve sleep quality. It is recommended to continue daily consumption for at least 4 weeks to observe benefits such as reduced muscle pain, improved sleep, and potential reduction in inflammation.

Description

Tart cherries, often available in the form of juice or supplements, has vitamin C, as well as anthocyanins and melatonin, known for their potential to reduce inflammation and improve sleep quality. They are rich in antioxidants and may aid in recovery from exercise-induced muscle soreness.

Cherries are stone fruits with numerous species. Tart or “sour” cherries (*Prunus cerasus*) are native to parts of Europe and Asia [\[R\]](#), [\[R\]](#).

They are close to regular, sweet cherries (*Prunus avium*) but more acidic. Hence, people do not eat them fresh but dried or in syrups, salads, pies, or liqueurs.

People consume tart cherries to help with [\[R\]](#):

- Gout
- Exercise recovery
- Blood sugar control
- Blood pressure

How it helps

Tart cherries contain anthocyanins, a type of antioxidant that helps improve insulin resistance and reduces blood glucose levels. This can be beneficial in managing fasting glucose levels and prevent the progression to type 2 diabetes.

A [meta-analysis of 10 trials](#) concluded that drinking tart cherry juice **lowers fasting glucose by 0.51 mg/dL**. The effects were **stronger in obese participants, those older than 40 years old, and studies followed up for less than 4 weeks** [\[R\]](#).

21



Green Coffee Extract

IMPACT3 / 5

EVIDENCE3 / 5

How to implement

Take a 400 mg dose of green coffee extract supplement daily. This can be consumed in the morning or as directed on the supplement’s packaging.

TYPICAL STARTING DOSE
400 mg

Description

Green coffee extract is believed to support weight management due to its high content of chlorogenic acids, which may help regulate blood sugar levels and promote fat metabolism.

Green coffee is made from unroasted coffee beans. It’s rich in an anti-inflammatory and antioxidant compound called [chlorogenic acid](#) [R, R].

Green coffee may help lower [R]:

- Blood pressure
- Weight
- Blood sugar levels

How it helps

Green coffee beans are rich in chlorogenic acid, which may decrease glucose absorption and affect how the body handles this sugar.

Three meta-analyses (the largest one with 15 studies and 637 participants) concluded that green coffee bean extract lowers fasting glucose by 1.79-2.35 mg/dL [R, R, R].

Please note: *Green coffee bean extract contains caffeine. Keep this in mind if you're trying to limit your caffeine intake. If you're pregnant, limit caffeine to 200 mg per day* [R].

Please note: *chlorogenic acid from green coffee beans may inhibit the production of the thyroid hormone T4 (thyroxine). Individuals with thyroid disorders, particularly hypothyroidism or low T4 levels, should exercise caution when using coffee bean extract and always consult with a healthcare provider before taking this supplement* [R].

Please note: *polyphenols and tannins from coffee may bind to iron and form insoluble complexes, which reduces iron absorption in the gut. If you have anemia, consult your healthcare provider before using coffee or coffee supplements.*

22



Artichoke

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Incorporate fresh or cooked artichoke into your diet 2-3 times per week. Each serving should include approximately one medium-sized artichoke or about 120 grams if using hearts. This can be included in meals such as salads, pastas, or as a steamed side dish.

Description

Artichokes are a vegetable known for their unique flavor and potential health benefits. They are a good source of fiber, vitamins, and minerals, and may support digestion, liver health, and antioxidant protection.

How it helps

Eating artichokes can help manage fasting glucose since they are high in dietary fiber, which can slow the absorption of sugar into your bloodstream and prevent spikes in blood glucose. Additionally, artichokes have an insulin-like effect, which can lower blood sugar levels.

A [meta-analysis of 9 trials](#) concluded that supplementation with artichokes and artichoke products **lowers fasting blood glucose (by 5.28 mg/dL) and HOMA-IR (only in a nocosupplementation form)** [\[R\]](#).

23

Strength Training

IMPACT2 / 5

EVIDENCE3 / 5

How to implement

Engage in strength training exercises, such as weight lifting or bodyweight exercises, for 60 minutes per session, 2 to 3 times per week. Ensure you work all major muscle groups and rest each muscle group for at least 48 hours before exercising it again.

TYPICAL STARTING DOSE

1 hour

Description

Strength training, also called resistance or *anaerobic* training, contracts the muscles against an external resistance for short periods of time. This helps gain muscle strength, tone, and mass. This can include activities like weight lifting, pushups, and crunches.

Strength training, also known as resistance training, is a type of physical exercise that uses resistance to build strength, anaerobic endurance, and size [R]. Some of the most common strength training methods include [R]:

- Weight lifting
- Bodyweight exercises like push-ups, pull-ups, squats, and lunges.
- Resistance bands
- Plyometrics or explosive force exercises

The benefits of strength training are numerous, and include [R]:

- Increased muscle strength
- Improved bone health
- Reduced risk of injury
- Improved balance and coordination
- Enhanced mood
- Boost metabolism

Consult with a doctor before starting any new exercise program, especially if you have any health conditions.

How it helps

Strength training helps lower your fasting glucose levels by enhancing insulin sensitivity and glucose utilization, which better regulates blood sugar levels. Additionally, it helps in maintaining a healthy weight, which is essential for controlling glucose levels.

Exercise is a great way to control blood sugar levels. When you exercise, your muscles use up sugar for energy. Exercise also makes your cells more sensitive to insulin [R, R, R, R, R].

Try a mix of cardio and strength training for at least 150 min/week [R, R, R].

All health experts recommend exercise to reduce blood sugar levels. However, you may need to combine it with diet for optimal results [R, R, R, R, R].

24



Vanadium

IMPACT

2 / 5

EVIDENCE

3 / 5

Description

Vanadium is a trace mineral that is found in small amounts in many foods. It is important for bone health, blood sugar control, and cholesterol levels. Vanadium may also help to protect against cancer and heart disease.

How it helps

Supplementation with vanadyl sulfate (100 mg/day for 3-6 weeks) improved fasting glucose, HbA1c, and hepatic and peripheral insulin sensitivity in placebo-controlled trials of 41 patients with non-insulin-dependent diabetes. However, it failed to improve insulin sensitivity in a placebo-controlled trial of 14 obese patients with impaired glucose tolerance. Similarly, it failed to enhance insulin action in another trial on type 1 diabetic patients [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

Similarly, vanadium-enriched yeast supplementation (0.9 mg/day vanadium pentoxide) for 12 weeks improved anthropometric indices and glycemic parameters in a placebo-controlled trial of 44 obese type 2 diabetes patients [\[R\]](#).

25



Magnesium

IMPACT2 / 5

EVIDENCE3 / 5

How to implement

Take up to 350 mg of magnesium daily as a supplement, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

250 mg

Description

Magnesium is an essential mineral involved in various bodily functions, including muscle contractions, nerve signaling, and bone health. Maintaining adequate magnesium levels through diet or supplements can support overall well-being and reduce the risk of magnesium deficiency-related health issues.

[Magnesium](#) is an essential mineral. Your body needs it for [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Muscle, nerve, and bone function
- Blood sugar and blood pressure control
- DNA and protein production
- Strong immunity

Women need **310-320 mg** of magnesium per day, while men need **400-420 mg** [\[R\]](#).

Foods rich in magnesium include **nuts, seeds, and leafy greens**. Magnesium is also available as a supplement [\[R\]](#).

How it helps

Compared with placebo, magnesium supplementation reduced fasting plasma glucose in people with diabetes. In people at high risk of diabetes, magnesium significantly improved plasma glucose per se, and after a 2 h oral glucose tolerance test [\[R\]](#).

Magnesium supplementation significantly improved fasting plasma glucose levels, showing a mean decrease of 4.641 mg/dL. Magnesium was especially beneficial to diabetic individuals with low magnesium levels [\[R\]](#).

Magnesium treatment decreased fasting plasma glucose in another placebo-controlled trial of individuals with diabetes. Additionally, it improved glucose levels in those at high diabetes risk during an oral glucose tolerance test [\[R\]](#).

Magnesium may help by improving insulin sensitivity.

26



Genistein

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Take a genistein supplement daily, with a usual dosage range between 30 mg to 100 mg. It is best taken with food to enhance absorption. Continue this regimen daily for at least six months to evaluate its benefits fully.

TYPICAL STARTING DOSE
30 mg

Description

Genistein is an isoflavone found in soy products that may offer potential health benefits, including antioxidant and anti-inflammatory properties. It has been studied for its potential role in hormone regulation and the reduction of certain cancer risks.

How it helps

A meta-analysis of seven trials involving 670 postmenopausal women found that genistein significantly reduced fasting glucose levels, fasting insulin concentrations, and HOMA-IR values compared to placebos [R].

Another meta-analysis of 11 studies found that genistein led to a notable improvement in HOMA-IR (-0.51) compared to controls. Subgroup analysis revealed greater benefits in women with BMI <30 kg/m² and no metabolic disorders. Additionally, secondary outcomes showed significant differences in total cholesterol, HDL cholesterol, fasting glucose, and insulin, but not in triglycerides or BMI [R].

Another meta-analysis found that genistein lowers fasting glucose (by 7.15 mg/dL), insulin (by 1.37 microIU/mL), and insulin resistance (by 0.39) [R].

Genistein can increase the activation of insulin receptors, improving how your body uses insulin to lower blood glucose levels. Additionally, it may reduce the production of glucose in the liver, leading to lower fasting glucose levels.

27



Barberry

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Take a barberry supplement of 500-1000 mg daily, divided into two or three doses with meals for up to 12 weeks. Do not exceed the recommended dose without consulting a healthcare provider.

TYPICAL STARTING DOSE

500 mg

Description

Barberry is an herbal remedy used in traditional medicine for its potential to support digestive health and reduce inflammation. It contains compounds that may have antimicrobial and antioxidant properties.

How it helps

A meta-analysis of 7 studies and 452 participants found that barberry supplementation can lower insulin levels but not fasting glucose, insulin resistance, or HbA1c. Another meta-analysis reported that both types of barberry reduce glucose levels in patients with metabolic syndrome. In non-placebo-controlled trials, consuming barberry juice decreased fasting glucose in patients with type 2 diabetes. Furthermore, a combination of barberry and milk thistle lowered fasting glucose and insulin resistance in patients with dyslipidemia. This combination also improved various metabolic parameters in obese individuals with type 2 diabetes and reduced insulin dosage requirements in patients with type 1 diabetes in placebo-controlled trials. Finally, barberry capsules reduced fasting glucose in patients with rheumatoid arthritis [\[R, R, R, R, R, R, R\]](#).

Barberry contains an active compound called berberine that can help lower high blood sugar levels by increasing insulin production and improving insulin sensitivity.

28



Oats

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Incorporate oats into your diet daily by having them for breakfast as oatmeal, or adding them to smoothies, baking recipes, or overnight oats. Aim for at least a half-cup (40 grams) of dry oats to reap the health benefits.

Description

Oats are a whole grain known for their high fiber content and nutritional value, like zinc, iron, and manganese. Including oats in one's diet can promote heart health, stabilize blood sugar levels, and provide sustained energy.

Oats are a good source for manganese, zinc, iron, magnesium, and vitamins B1 and B5. A ½ cup serving provides 0.7 mg of manganese or 30%DV.

How it helps

Regular consumption of oats can regulate your fasting glucose level as they are rich in soluble fiber which slower the absorption of glucose from food in the stomach, keeping blood sugar levels under control. This helps to prevent sudden spikes and falls in blood glucose, which can help manage diabetes.

Three meta-analyses (the largest one with 59 trials) found that oats interventions (20-136 g/day) decrease fasting glucose, fasting insulin, HbA1c, and glucose AUC [\[R\]](#), [\[R\]](#), [\[R\]](#).

A meta-analysis of 14 studies found that oats intake reduces HbA1c (by 0.42%), fasting glucose (by 0.39 mmol/L), total cholesterol (by 0.49 mmol/L), and LDL cholesterol (by 0.29 mmol/L) in diabetic patients [\[R\]](#).

Whole grains or thick flakes may be better than thin or instant flakes for lowering postprandial blood glucose according to a systematic review of 10 studies [\[R\]](#).

29



Maintain Optimal Vitamin D Levels

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Check your vitamin D levels, they should ideally be in the 30-66 ng/mL range. If your levels are lower than that, take a vitamin D supplement, 1000-4000 IU daily, to reach an optimal range.

TYPICAL STARTING DOSE

1000 iu

Description

Vitamin D, often referred to as the "sunshine vitamin," can be synthesized by the skin when exposed to sunlight, as well as being found in fish, eggs, and fortified milk. It helps regulate calcium absorption, promoting strong bones and a healthy immune system. Vitamin D deficiency can lead to conditions like rickets in children and osteoporosis in adults.

Your body needs [vitamin D](#) for strong bones. Vitamin D also plays a role in [\[R\]](#):

- Mood
- Immunity
- Heart health
- Blood sugar control

[Sunlight](#) is our main source of vitamin D. Experts recommend getting at least **5-15 minutes of midday sun, 2-3 times per week**. People with darker skin and those living at high latitudes may need longer periods of sun exposure [\[R\]](#), [\[R\]](#).

Foods like fish, eggs, and fortified milk provide small amounts of vitamin D. **People lacking vitamin D should consider taking a supplement** [\[R\]](#).

How it helps

In a trial of 70 women with gestational diabetes at 24-28 weeks of pregnancy, supplementation with vitamin D (500-1000 IU/day) and calcium (500-1000 mg/day) reduced fasting glucose. The highest dose also lowered fasting serum insulin, LDL, and total cholesterol while increasing HDL [\[R\]](#).

However, genetically predicted higher serum calcium levels may be associated with an increased risk of diabetes [\[R\]](#).

Vitamin D improves the body's sensitivity to insulin.

30



Curcumin

IMPACT

2 / 5

EVIDENCE

3 / 5

How to implement

Take a 500 mg curcumin supplement daily with food. To enhance absorption, take it with a meal that contains fats or oils since curcumin is fat-soluble.

TYPICAL STARTING DOSE

500 mg

Description

Curcumin is a compound found in turmeric known for its anti-inflammatory and antioxidant properties. It has been studied for its potential to reduce inflammation, support joint health, and contribute to overall well-being.

[Turmeric](#) is a yellow spice from India. It may reduce inflammation and [oxidative stress](#) [R].

The most important active compound in turmeric is **curcumin**. People use curcumin for [R, R, R, R, R, R]:

- Joint pain
- Hay fever
- Mood
- High blood sugar
- Gut health
- Liver health

How it helps

Curcumin, a component of turmeric, can improve fasting glucose levels by helping your body react better to insulin, thereby reducing insulin resistance. This can lower your blood sugar and help manage conditions like diabetes.

Curcumin (up to 4 g/day for 4-12 weeks) may lower blood sugar and improve insulin resistance [R, R, R, R, R].

Curcumin may help by [R, R]:

- Protecting against oxidative stress
- Lowering inflammation

Note that curcumin is hard to absorb. Look for supplements with *bioavailable* curcumin, which is easier to absorb. Combining it with [piperine](#) (a compound in black pepper) may also help [R, R].

Health experts say there’s not enough evidence to recommend curcumin supplementation for diabetes [R].

Evidence from 17 RCTs including 22 trials showed that turmeric and curcuminoids lowered FBG, HbA1c, and HOMA-IR [R].

In 11 studies, turmeric, curcuminoids, and curcumin supplementation reduced FBG levels significantly (-8.88 mg/dL). Curcuminoids and/or curcumin also lowered HbA1c levels (-0.54%), but they did not have a significant impact on HOMA-IR levels [R].

Please note: curcumin may interfere with iron absorption due to its iron-chelating properties, potentially exacerbating anemia or making it harder to manage. If you have anemia, consult your healthcare provider before using curcumin or turmeric supplements [R, R, R].

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Cocoa

IMPACT

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EVIDENCE

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How to implement

Incorporate 30-60 grams of high-quality dark chocolate (with at least 70% cocoa content) into your daily diet. Enjoy it as a snack or dessert to reap the potential heart health benefits.

Description

[Cocoa](#) comes from the beans of the *Theobroma cacao* tree. It is found any many foods and drinks, and people have also used it as a medicine for thousands of years. The numerous active components of cocoa can help with weight control, fatigue, mood, and digestion, among others.

[Cocoa](#) comes from the beans of the *Theobroma cacao* tree. It’s often used for making chocolate, hot chocolate, and pastries. People have also used it as a medicine for over a thousand years [\[R\]](#), [\[R\]](#).

Cocoa contains many active components that likely help [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Control weight
- Lower fatigue
- Boost mood
- Improve digestion
- Balance blood sugar
- Support heart health

Note that pure cocoa is likely a healthier choice than chocolate. If you eat chocolate, choose dark chocolate with more cocoa and less sugar and fat.

How it helps

Cocoa contains flavonoids, antioxidants that increase insulin sensitivity, which can lower blood sugar levels. Therefore, having a reasonable amount of cocoa could help treat fasting glucose by making your body handle glucose better.

In a meta-analysis of 8 RCTs with 433 diabetic patients, cocoa/dark chocolate consumption significantly reduced LDL cholesterol levels by 15.49 mg/dl and fasting blood sugar by 6.88 mg/dl [\[R\]](#).

In a review of 19 studies with 1131 participants, cocoa flavanol intake (166-2110 mg/d, 2-52 weeks) significantly improved insulin sensitivity and lipid profile. Various biomarkers showed specific changes [\[R\]](#).

In 12 trials (9 long-term and 3 short-term), cocoa products significantly reduced LDL cholesterol (-9.955 mg/dL), triglycerides (-15.364 mg/dL), blood glucose (-9.105 mg/dL), and C-reactive protein (-0.978 mg/L) in long-term use [\[R\]](#).

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Berberine

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Take 500 mg of berberine two times a day before meals. Continue this regimen for up to three months, then evaluate its effects with your healthcare provider.

TYPICAL STARTING DOSE

1000 mg

Description

Berberine is a compound found in certain plants, known for its potential to support blood sugar control and heart health.

[Berberine](#) is an active compound of some plants used in traditional medicine, such as [\[R\]](#):

- European barberry
- Oregon grape
- Goldenseal
- Chinese goldthread
- Tree turmeric

Berberine is also available as a supplement. People use it to help with [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Diabetes
- High cholesterol
- High blood pressure
- PCOS

How it helps

In the general population, **berberine (0.5-1.5 g/day for 2-6 months) may help control blood sugar**. It likely boosts sensitivity to insulin and lowers inflammation [\[R\]](#), [\[R\]](#), [\[R\]](#).

The combination of berberine and [milk thistle](#) may provide similar benefits [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

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Avoid Perchlorate

IMPACT

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EVIDENCE

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How to implement

To avoid perchlorate, check water quality reports for your area to ensure your drinking water does not contain high levels of perchlorate. Also, limit consumption of foods known to have higher perchlorate levels, such as leafy green vegetables, dairy products, and fruits, or opt for organic versions of these foods as organic farming standards restrict certain chemicals.

Description

Perchlorate is a chemical that can interfere with the thyroid gland's ability to produce thyroid hormone. This can lead to a variety of health problems, including hypothyroidism, developmental delays, and cancer. Avoiding perchlorate can help to protect your health.

How it helps

A study of 11,433 participants associated high levels of urinary perchlorate with a 53% higher risk of diabetes and higher levels of fasting glucose, HbA1c, insulin, and insulin resistance [R].

Perchlorate can disrupt thyroid hormone production, impacting your body's ability to regulate glucose.

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Oyster Mushroom

IMPACT

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EVIDENCE

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How to implement

Consume 600 mg to 1.2 grams of oyster mushroom extract in supplement form daily, ideally divided into two or three doses. Continue this routine for 1 to 2 months to evaluate its effects on your health.

TYPICAL STARTING DOSE

600 mg

Description

Oyster mushrooms (pleurotus ostreatus) are a popular and edible species of mushroom grown all over the world, rich in protein, fiber, B-vitamins, vitamin D, potassium, iron, and selenium. They have been used in Chinese medicine for their potential benefits toward immune function. They are eat today for being nutritious and a source of antioxidants.

How it helps

Oyster mushrooms contain potent antioxidants and beta-glucans that can help in improving insulin resistance and therefore lower fasting glucose levels. They support healthy blood sugar levels by enhancing the body's glucose metabolism and insulin sensitivity.

In various non-placebo-controlled trials, oyster mushrooms and a related species, *P. eryngii*, showed potential benefits in glycemic control. Oyster mushrooms reduced fasting and postprandial glucose levels in healthy volunteers and improved postprandial glucose and insulin levels in type 2 diabetics. Consumption of oyster mushrooms over three months decreased fasting glucose levels in both sexes. Additionally, *P. eryngii* improved postprandial glycemia, appetite, and ghrelin levels in individuals with metabolically unhealthy obesity [R, R, R].

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Tocotrienols

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How to implement

Take tocotrienols as a dietary supplement in doses ranging from 100 to 200 mg, 1-2 times a day, ideally with meals to enhance absorption. This intake can be continuous, but it's recommended to review its effects with a healthcare provider periodically, typically every 6 to 12 months.

TYPICAL STARTING DOSE
100 mg

Description

Tocotrienols are a form of vitamin E that helps to protect your cells. They fight harmful substances in your body called free radicals, which can damage our cells and lead to illness. By helping your body in this way, tocotrienols contribute to overall health, boosting immunity, and slowing down aging processes.

How it helps

Tocotrienols may help by increasing insulin sensitivity.

In a randomized controlled trial in 82 patients with metabolic syndrome, δ -tocotrienol in combination with resveratrol (400 mg capsule, δ -tocotrienol 250 mg; resveratrol 150 mg, 2x/day for 24 weeks) lowered fasting glucose by 0.15 mmol/L. In 2 randomized controlled trials of 77 individuals with prediabetes and 110 with type 2 diabetes, delta-tocotrienol (300-250 mg/day for 12-24 weeks) reduced fasting plasma glucose, HbA1c, insulin, and insulin resistance. Two double-blinded randomized, active-controlled trials of 171 patients with NAFLD found that δ -tocotrienol lowered insulin resistance. However, a study cohort including 29,133 male smokers found no association between dietary α -tocopherol, β -tocopherol, and β -tocotrienol with risk of diabetes [[R](#), [R](#), [R](#), [R](#), [R](#), [R](#)].

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L-Carnitine

IMPACT

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EVIDENCE

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How to implement

Take 500 mg of L-carnitine supplement daily with a glass of water, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

500 mg

Description

L-carnitine is an amino acid-like compound that plays a role in energy metabolism and helps prevent toxic substances from building up in cells. It is often used in dietary supplements for its potential to support muscle recovery, reduce fatigue, and enhance athletic performance.

[L-carnitine](#) is a compound that helps you burn fat. It also prevents toxic substances from building up in cells [\[R\]](#).

Your body can usually make enough carnitine to meet its needs. You can also get it from **meat and dairy products** [\[R\]](#).

People use L-carnitine for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart problems
- Overactive thyroid
- Fertility problems
- Blood sugar control
- Weight control

How it helps

L-carnitine may help reduce fasting glucose because it aids in breaking down fats for energy, improving insulin sensitivity. This could potentially lower blood sugar levels and help maintain a stable glucose level during fasting.

L-carnitine may boost your sensitivity to insulin. It helps remove chemicals linked to insulin resistance from your cells [\[R\]](#).

L-carnitine (0.2-3 g/day for 1-12 months) may help reduce blood sugar levels [\[R\]](#), [\[R\]](#), [\[R\]](#).

A meta-analysis of 15 studies (12,221 participants) indicated significant improvements in fasting blood glucose, insulin, HOMA-IR, triglycerides, total cholesterol, LDL cholesterol, and ALT levels. Longer L-carnitine supplementation duration negatively correlated with fasting blood glucose [\[R\]](#).

A meta-analysis of 24 randomized trials in adults with cardiovascular risk factors examined L-carnitine's effects on lipid profiles and glycaemic control. Results revealed significant improvements in total cholesterol, LDL cholesterol, HDL cholesterol, Lp(a), fasting blood glucose, HbA1C, and HOMA-IR with doses exceeding 1500 mg/day [\[R\]](#).

A meta-analysis of nine randomized controlled trials examined the impact of L-carnitine supplementation on metabolic syndrome biomarkers. Results showed significant reductions in waist circumference and systolic blood pressure. Doses **above 1 g/day** were associated with improved fasting blood sugar, triglycerides, and HDL cholesterol levels [\[R\]](#).

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Garlic Supplement

IMPACT

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EVIDENCE

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How to implement

Take a garlic supplement, such as a garlic extract or aged garlic supplement, in a dosage of 600-1,200 mg per day, divided into separate doses. This should be taken with meals to minimize digestive issues. Continue daily for at least 8-12 weeks to evaluate its effects on health markers like blood pressure or cholesterol.

TYPICAL STARTING DOSE

200 mg

Description

Garlic is a pungent herb known for its potential health benefits, including cardiovascular support and immune system enhancement. It contains bioactive compounds that may help reduce the risk of chronic diseases and support overall well-being.

[Garlic](#) is a delicious aromatic herb that adds flavor to your food. But did you know that garlic has been a part of traditional medicine for thousands of years? **From ancient Egypt and Rome to China, people have praised garlic for its many health benefits.** Today, we can trace many of those benefits to sulfur-rich compounds found in garlic. People take garlic to help control their blood pressure and cholesterol [\[R\]](#).

Please note: *Garlic can interact with blood thinners (like aspirin, Plavix, Coumadin). If you are on blood thinners, consult your doctor before supplementing with garlic [\[R\]](#).*

How it helps

A meta-analysis of 7 trials and 513 participants concluded that garlic intake lowers fasting glucose [\[R\]](#).

Please note: *Garlic can interact with blood thinners (such as aspirin, Plavix, and Coumadin). In addition, garlic can irritate the stomach in some people. Talk to your doctor before taking garlic [\[R, R\]](#).*

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Biotin And Chromium Picolinate

IMPACT

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EVIDENCE

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Description

Biotin and Chromium Picolinate are nutrients that your body needs for good health. Biotin, a type of B vitamin, helps to turn the food you eat into energy. Chromium Picolinate helps your body maintain proper sugar levels and can contribute to weight loss. Both are essential for maintaining a healthy metabolism and overall wellbeing.

How it helps

Biotin has a crucial role in regulating genes linked to blood glucose control in our bodies. Chromium picolinate assists insulin, the hormone critical to converting food into energy.

The combination of biotin (2 mg/day) and chromium picolinate (600 mcg/day) taken for 28-90 days lowered fasting glucose (by 9.8 mg/dL), 2-hour glucose after a glucose tolerance test (by 9.7%), and HbA1c in 4 placebo-controlled trials of 874 patients with type 2 diabetes [\[R, R, R, R\]](#).

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Magnesium Chloride

IMPACT

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EVIDENCE

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How to implement

Take 200-400 mg of magnesium chloride daily, ideally in divided doses with meals to reduce the risk of stomach upset. It can be taken indefinitely as part of a daily supplementation routine to support magnesium levels in the body.

TYPICAL STARTING DOSE

200 mg

Description

Magnesium chloride is a magnesium supplement that can be used to support magnesium levels in the body. It may help alleviate symptoms of magnesium deficiency, such as muscle cramps and fatigue.

How it helps

In a placebo-controlled trial of 198 participants with metabolic syndrome and low serum magnesium, supplementation with 5% magnesium chloride lowered systolic blood pressure (by 3.6 mmHg), diastolic blood pressure (by 5.5 mmHg), fasting glucose (by 12.4 mg/dL), triglycerides (by 61.2 mg/dL) while increasing HDL cholesterol (by 0.9 mg/dL) [\[R\]](#).

A randomized controlled trial of people with prediabetes found that oral magnesium chloride reduced the risk of diabetes and cardiovascular disease. In another placebo-controlled trial of 63 patients with type 2 diabetes, supplementation with magnesium chloride for 16 weeks lowered the HOMA-IR index (by 1.2), fasting glucose (by 2.3 mmol/L), and HbA1c. Magnesium chloride (2.5 g/day for 3 months) also lowered HOMA-IR (by 2) in a placebo-controlled trial of non-diabetic subjects with insulin resistance [\[R\]](#), [\[R\]](#), [\[R\]](#).

However, sustained-release magnesium chloride (384 mg/day for 6 weeks) only lowered systolic blood pressure (by 7.4 mmHg) in a placebo-controlled trial of 28 diabetic patients [\[R\]](#).

Magnesium may help by improving the ability of pancreatic beta-cells to improve insulin sensitivity [\[R\]](#).

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Astaxanthin

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Take an astaxanthin supplement daily, with a typical dosage ranging from 4 to 12 mg. It is best taken with a fat-containing meal to enhance absorption.

TYPICAL STARTING DOSE
12 mg

Description

Astaxanthin is a powerful antioxidant found in certain microalgae and seafood. It is known for its potential benefits in reducing oxidative stress, supporting skin health, and promoting eye health.

[Astaxanthin](#) is a naturally-occurring orange-red pigment carotenoid found in algae, shrimp, lobster, crab, and salmon [\[R\]](#).
As an antioxidant, astaxanthin is **10 times stronger than zeaxanthin, lutein and [beta-carotene](#), and 100 times stronger than [vitamin E](#)** [\[R\]](#).
People take astaxanthin to:

- Support skin health [\[R, R\]](#)
- Reduce exercise fatigue [\[R, R\]](#)
- Prevent heart disease [\[R, R, R\]](#)

How it helps

Astaxanthin is considered to improve insulin sensitivity which helps in better glucose management, thus potentially reducing high blood sugar levels. Also, its antioxidant properties can help alleviate inflammation often associated with high blood sugar.

In a [placebo-controlled trial of 53 healthy and prediabetic participants](#), supplementation with astaxanthin (12 mg/day) for 12 weeks **lowered glucose after an oral glucose tolerance test, HbA1c, apoE levels, and oxidized LDL** [\[R\]](#).

Astaxanthin (8 mg/day taken for 8 weeks) **lowered plasma glucose, triglycerides, visceral fat, VLDL, total cholesterol, and systolic blood pressure** in a [placebo-controlled trial of 44 patients with type 2 diabetes](#) [\[R\]](#).A systematic review and meta-analysis of randomized controlled trials found that astaxanthin supplementation did not show any significant effect on plasma concentrations of total cholesterol, LDL-C, HDL-C, triglycerides, or glucose. However, a slight glucose-lowering effect was observed, suggesting the need for further research to validate these results [\[R\]](#).

A multi-ingredient nutraceutical with astaxanthin, red yeast rice, berberine, policosanol, coenzyme Q10, and folic acid (NComb) **lowers glucose (by 2.59mg/dL)** according to a [meta-analysis of 14 trials and over 3k participants](#) [\[R\]](#).

A systematic review and meta-analysis of randomized controlled trials found that astaxanthin supplementation did not show any significant effect on plasma concentrations of total cholesterol, LDL-C, HDL-C, triglycerides, or glucose. However, a slight glucose-lowering effect was observed, suggesting the need for further research to validate these results [\[R\]](#).

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Yacon

IMPACT

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EVIDENCE

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How to implement

Incorporate yacon, which is a sweet-tasting root vegetable, into your diet by consuming 1-2 teaspoons of yacon syrup with meals daily to benefit from its prebiotic and blood sugar-lowering properties. Alternatively, yacon root can be eaten raw, baked, or made into tea. It's recommended to start with smaller amounts to assess tolerance.

Description

Yacon is a root vegetable native to South America and is used as a natural sweetener due to its high content of fructooligosaccharides. Yacon syrup or powder is often consumed for its potential prebiotic effects, promoting gut health and supporting weight management.

How it helps

In a placebo-controlled trial of 72 elderly participants, consuming freeze-dried yacon (7.4 g/day FOS) for 9 weeks decreased fasting glucose [\[R\]](#).

In 2 placebo-controlled trials of 40 women (20 normal-weight and 20 obese), consuming breakfast plus 40 g yacon syrup lowered postprandial glucose and insulin. Yacon was most effective in those with a higher abundance of *Actinobacteria* and *Bifidobacteriales* [\[R\]](#), [\[R\]](#).

Yacon, rich in fructooligosaccharides, can help to reduce fasting glucose levels as it increases insulin sensitivity and hence regulates blood sugar levels.

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Passion Fruit Flour

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Incorporate 30 grams of passion fruit flour into your diet daily. This can be achieved by adding it to smoothies, yogurt, or baked goods. Continue this supplementation for at least 8 weeks to observe potential health benefits such as improved glycemic control.

TYPICAL STARTING DOSE

30 g

Description

Passion fruit flour is made from the seeds and pulp of passion fruit, a tropical fruit originating from South America. It is rich in dietary fiber, vitamins, and antioxidants, making it a nutritious ingredient that can be added to various recipes to support digestive health, boost the immune system, and provide a natural source of essential nutrients like vitamin C and dietary fiber.

[[R](#), [R](#), [R](#)]

How it helps

A systematic review and meta-analysis of 11 studies found that turmeric flour and passion fruit peel flour (*Passiflora edulis* L.) helped with glycemic control (in the order of 0.73 and 0.32, respectively) assessed by glycated hemoglobin levels [[R](#)].

In a randomized, placebo-controlled, clinical trial with 89 patients with type 2 diabetes, yellow passion fruit albedo flour (500 mg capsules, 3x/day, at fasting for 120 days) got a higher reduction (-5.9%) of glycemia after fasting, compared to placebo (+9%), and long turmeric capsules (500 mg), merged with piperine (5 mg) (-3.2%). Both treatments also reduced HbA1c (-0.8%). However, turmeric reduced HOMA-IR (-9.4%) and serum triglyceride levels (-20.8%) unlike passion fruit [[R](#)].

A clinical trial with 43 type 2 diabetic volunteers found that yellow passion fruit peel flour (*Passiflora edulis* f. *flavicarpa* deg.) (30 g/day for 2 months) reduced fasting blood glucose and glycated hemoglobin, and HOMA IR, without changing insulin values for females. It also increased HOMA beta [[R](#)].

Passion fruit flour has high fiber content which may help slow glucose absorption.

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Honey

IMPACT

2 / 5

EVIDENCE

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How to implement

Consume 1-2 tablespoons of raw honey daily, either directly or by mixing it into warm water, tea, or yogurt. Continue this practice regularly to observe benefits.

Description

Honey is a natural sweetener known for its antimicrobial properties and potential benefits for wound healing. It contains antioxidants and may have soothing effects on sore throats and coughs.

[Honey](#) is a thick, sweet substance. It’s made by honeybees from the nectar of flowering plants. There are many different types of honey. Besides sugar, honey also contains amino acids (protein building blocks), vitamins, and minerals [\[R\]](#).

People use honey for its anti-inflammatory and antioxidant properties. It can potentially help with [\[R\]](#):

- Heart problems
- Gut problems
- Cough
- Burns

How it helps

Honey, while natural, still raises blood sugar levels due to its sugar content. Thus, it is not beneficial for managing high blood sugar and should be consumed with caution.

A [meta-analysis of 155 studies and 5086 participants](#) concluded that food sources of fructose (including honey) decrease HbA1c (by 0.22% or 25.9 mmol/mol) [\[R\]](#).

Another [meta-analysis \(18 trials and 1105 participants\)](#) found that honey, **especially Robinia, clover, and unprocessed raw honey, reduces fasting glucose (by 0.20 mmol/L) with low certainty of evidence** [\[R\]](#).

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Intermittent Fasting

IMPACT

2 / 5

EVIDENCE

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How to implement

Limit your daily eating to a specific window of time, typically within an 8-hour period such as from 12 pm to 8 pm, and fast for the remaining 16 hours of the day. Repeat this daily or for at least 3-4 days per week.

Description

Intermittent fasting is an eating pattern that involves cycling between periods of fasting and eating. It may help with weight management, improve metabolic health, and offer potential benefits for certain health conditions when done under proper guidance.

[Intermittent fasting](#) (IF) is a pattern of eating that alternates between periods of eating and fasting. The most popular IF method is called the 16/8 method, where you fast for 16 hours and eat during an 8-hour window.

People mainly practice IF to lose weight. Besides benefits related to weight reduction, IF may help lower the risk of [\[R\]](#):

- Alzheimer's disease
- Joint pain
- Asthma
- Multiple sclerosis
- Stroke

Some types of intermittent fasting, such as Ramadan fasting, are also practiced for religious reasons.

How it helps

Intermittent fasting may have comparable effects to continuous energy restriction on glycemic control and better effects on weight loss. However, a study found no significant difference in HbA1c reduction with intermittent fasting compared to a standard diet. However, multiple studies found no significant benefits on blood pressure, cholesterol, or glucose levels [\[R, R, R, R, R, R\]](#).

Seventy-two studies (3134 participants) found that Ramadan-based intermittent fasting reduced fasting glucose levels (by 1.71 mg/dL) but had mixed effects on other glucometabolic markers [\[R, R\]](#).

Intermittent fasting may help by allowing your body more time to use glucose in the bloodstream for energy, therefore reducing overall blood sugar levels. It also improves insulin sensitivity so your cells can use available insulin more effectively.

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Poria

IMPACT

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EVIDENCE

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How to implement

Take 500mg of Poria supplement orally once daily, with or without food. It is typically consumed in capsule form for ease of dosage and can be continued long-term on a daily basis.

Description

Poria, also known as Poria cocos, is a fungus that grows on the roots of certain trees, primarily in East Asia. It has been used traditionally in Chinese medicine for its potential to promote diuresis (increased urine production), support the spleen, digestive health, and improve sleep.

How it helps

Poria may promote better blood sugar control, limiting the amount of glucose your body produces while fasting.

A meta-analysis of 73 trials and 6,489 participants concluded that supplementation with poria-containing remedies as an add-on to antiglycemic agents lowers fasting blood glucose [R].

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Stinging Nettle

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take a 300 to 600 mg capsule of stinging nettle extract daily with water, ideally with a meal to reduce the risk of stomach discomfort. Continue for at least 3 months to observe benefits.

TYPICAL STARTING DOSE

300 mg

Description

Stinging nettle is a plant known for its stinging hairs on its leaves and stems, and is native to parts of Europe and Asia. It has been used in traditional medicine as an herbal remedy and today as a dietary supplement. It contains compounds like flavonoids, polyphenols, and vitamins A and C, iron, and calcium. This helps it provide potential benefits for allergies and arthritis.

[Stinging nettle](#) (*Urtica dioica*), also known as common nettle, is a herb that grows all over the world. Coming in contact with the stinging hairs on the leaves and stems may cause a burning sensation [\[R\]](#), [\[R\]](#), [\[R\]](#).

In ancient Egypt, it was commonly used to treat arthritis. Stinging nettle has also been used to [\[R\]](#):

- Reduce inflammation
- Relieve allergies
- Control blood pressure
- Improve wound healing
- Support prostate health

Stinging nettle is available in many forms, including:

- Capsules
- Tincture
- Tea
- Cream
- Leaves

How it helps

A meta-analysis of 8 trials and 401 patients with type 2 diabetes concluded that supplementation with stinging nettle lowers fasting glucose (by 18.01 mg/dL), but not insulin, insulin resistance, or HbA1c [\[R\]](#).

Stinging nettle contains compounds that may improve insulin sensitivity and reduce blood sugar levels.

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Kimchi

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Incorporate about a half cup of kimchi into one of your daily meals. This could be as a side dish or part of the meal for at least one month to observe potential health benefits such as improved digestion.

Description

Kimchi is a fermented vegetable dish commonly consumed in Korean cuisine. It's packed with probiotics and nutrients, which can promote gut health and boost the immune system.

How it helps

Kimchi, a fermented food, can help lower fasting glucose levels as it enhances insulin sensitivity, leading to improved blood sugar control. The probiotics present in kimchi also support gut health, which plays a pivotal role in managing glucose metabolism.

In a [non-placebo-controlled trial of 100 healthy volunteers](#), consuming kimchi (15-210 g/day) for 7 days had a **dose-dependent lowering effect on fasting glucose, total glucose, TC, and LDL-C**. The lipid-lowering effects of kimchi were **stronger in people with TC above 190 mg/dL and LDL-C above 130 mg/dL** [\[R\]](#).

In a [non-placebo-controlled trial of 22 overweight and obese participants](#), consuming kimchi (both fresh and fermented) for 4 weeks **lowered fasting glucose, fasting insulin, and total cholesterol, especially if fermented** [\[R\]](#).

In a [non-placebo-controlled trial of 21 prediabetic participants](#), consuming fermented kimchi for 8 weeks **decreased insulin resistance and improved glucose tolerance** [\[R\]](#).

In a [placebo-controlled trial of 40 prediabetic participants](#), supplementation with the kimchi-derived probiotic Lactobacillus plantarum HAC01 for 8 weeks **reduced 2h-PPG and HbA1c levels** [\[R\]](#).

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Whole-Body Vibration

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Stand, sit, or lie on a machine with a vibrating platform for about 15 minutes a day, three times a week. Make sure to start with a lower intensity and gradually increase as you get more accustomed to the vibrations.

TYPICAL STARTING DOSE

15 minutes

Description

Whole-body vibration involves standing, sitting, or lying on a vibrating platform to stimulate muscle contractions. It's used in fitness routines and rehabilitation for improving muscle strength, circulation, and balance, and may benefit conditions like osteoporosis. No specific chemical compound or nutrient is associated with whole-body vibration.

Whole-body vibration is a form of exercise and treatment utilizing a vibrating platform upon which a person stands or performs various exercises. It creates vertical, oscillating vibrations with frequencies and amplitudes that can be controlled by the user [\[R\]](#).

Whole-body vibration is used for a variety of purposes, including [\[R\]](#):

- Weight loss
- Boosting strength
- Improving balance/coordination
- Boosting mood

How it helps

A meta-analysis of 7 studies on type 2 diabetes patients (279 participants) revealed that whole-body vibration improved pain, leg blood flow, glycated hemoglobin, and fasting blood glucose. It also enhanced mobility, balance, and aerobic capacity. Another meta-analysis of 2 trials showed that whole-body vibration reduced fasting blood glucose by 25.7 ml/dl and improved various factors, primarily after 12 weeks. Further large-scale studies are necessary to determine its true effectiveness [\[R, R\]](#).

Whole-body vibration can enhance muscle contractions, which can help your body use glucose and improve insulin sensitivity.

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Bitter Melon Supplement

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take a bitter melon supplement in the form of capsules or tablets, typically ranging from 500 mg to 1000 mg per day, split into two to three doses before meals. It's recommended to follow the dosage instructions on the product label or consult a healthcare provider for personalized advice. Continue for as long as recommended by the healthcare provider, usually a few weeks to months, to monitor effectiveness and tolerance.

TYPICAL STARTING DOSE

500 mg

Description

Bitter melon supplements are often used in traditional medicine for their potential to support blood sugar control. They contain compounds that may help regulate glucose metabolism and promote overall metabolic health.

How it helps

Bitter Melon Supplement can lower blood sugar levels, which can improve fasting glucose readings. It operates akin to insulin by aiding glucose movement into cells, thus benefiting those with high fasting glucose.

A meta-analysis of 10 studies on type 2 diabetes (n=1045) found that M. charantia monoherbal formulation significantly reduced FPG, PPG, and HBA1c compared to placebo, with moderate to high bias risk. In prediabetes, it lowered FPG, but evidence quality was low due to unclear bias risk and a small sample size [\[R\]](#).

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Jujube

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take jujube supplements in the form of capsules or extract, generally ranging from 250 mg to 500 mg, once or twice daily. It is recommended to follow the dosage instructions on the product label or consult a healthcare professional for personalized advice. For best results, incorporate into your daily routine for at least 4 to 8 weeks.

TYPICAL STARTING DOSE
250 mg

Description

Jujube is a fruit rich in antioxidants and vitamins. It can support digestive health, provide a source of essential nutrients, and contribute to overall well-being when included in the diet.

How it helps

Jujube can help reduce fasting glucose levels by stimulating the pancreas to secrete more insulin, which helps to move sugar out of the bloodstream. This effect could be beneficial for those with higher levels of fasting glucose.

In a non-placebo-controlled trial of 48 patients with type 2 diabetes, supplementation with dried jujube (30 g/day) for 12 weeks lowered fasting glucose (by 11.36%), triglycerides (by 13.59%), LDL cholesterol (by 7.46%), and CRP (by 24.46%). Similarly, consuming jujube infusion (10 g/100 mL boiling water) 3x/day before meals as an add-on to a balanced diet for 12 weeks lowered HbA1c, total cholesterol (by 5.69 mg/dL), triglycerides (by 16.14 mg/dL), LDL cholesterol (by 13.30 mg/dL), LDL:HDL, and TC:HDL in a non-placebo-controlled trial of 116 patients with type 2 diabetes. In a placebo-controlled trial of 86 obese adolescents with dyslipidemia, supplementation with jujube fruit powder (5 g, 3x/day) for 1 month decreased total and LDL cholesterol [\[R\]](#), [\[R\]](#), [\[R\]](#).

51



Broccoli Sprouts

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Consume 2-4 tablespoons of fresh broccoli sprouts daily. They can be added to salads, sandwiches, or smoothies to make them easier to consume. Continue this practice daily for at least 3 months to potentially see benefits.

TYPICAL STARTING DOSE

2 tbsp

Description

Broccoli and broccoli sprouts are nutrient-dense vegetables packed with vitamins, minerals, and antioxidants. They are known for their potential to support a healthy immune system, protect against chronic diseases, and promote overall nutritional wellness.

How it helps

Broccoli sprouts are rich in sulforaphane, a compound known to improve blood sugar control and reduce insulin resistance, which can help lower fasting glucose. It also has antioxidant and anti-inflammatory effects that can contribute to overall metabolic health.

Seventeen studies primarily used broccoli sprouts as an intervention. Results were consistent for blood glucose, lipid profile, and oxidative stress improvement. Less evidence was found for decreased inflammation, Helicobacter pylori colonization, and cancer protection [R].

52



Chlorella

IMPACT

2 / 5

EVIDENCE

2 / 5

How to implement

Take 3 to 5 grams of chlorella in tablet or powder form daily, ideally before meals to improve digestion. Continue this supplementation for at least 2 to 3 months to observe benefits.

TYPICAL STARTING DOSE

3 g

Description

[Chlorella](#) is a microalga from freshwater. People consume chlorella in rice, pancakes, or tea. It can also be found as a supplement [\[R\]](#) [\[R\]](#).

Chlorella is **rich in protein** and several micronutrients. It may be useful to [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#) [\[R\]](#):

- Reduce blood sugar
- Lower cholesterol
- Reduce blood pressure
- Improve immunity

How it helps

A meta-analysis of 19 trials and 797 participants concluded that supplementation with chlorella (especially at doses of at least 4 g/day for at least 8 weeks) lowers fasting blood glucose by 4.23 mg/dL [\[R\]](#).

53



Probiotic Yogurt

IMPACT2 / 5

EVIDENCE2 / 5

How to implement

Consume one to two servings of probiotic yogurt each day. Each serving is typically 6 to 8 ounces. Continue this practice daily for at least 1 to 2 weeks to begin noticing benefits to digestive health.

Description

Probiotic yogurt is a dairy product containing live probiotic cultures like Lactobacillus and Bifidobacterium, which can aid digestion and improve gut health when consumed regularly. It is a good source of calcium, protein, and probiotics, contributing to bone health and digestive well-being.

How it helps

Probiotic yogurt can help lower fasting glucose levels as it aids in balancing gut bacteria, which impacts how your body processes sugar. This food can normalize your blood sugar levels and potentially reduce the risk of developing type 2 diabetes.

“Four manuscripts with a total of 533 participants were included in this meta-analysis. There was a statistically significant association between probiotic yogurt and reduced risk of gestational diabetes mellitus. Furthermore, the mean reduction in the fasting plasma glucose was significantly higher in the probiotic yogurt groups” [R].

54



Vitamin D and Calcium

IMPACT2 / 5

EVIDENCE1 / 5

How to implement

Take 600 IU of vitamin D and 1000 mg of calcium daily. For adults over 70 years, the vitamin D intake should be increased to 800 IU daily. These supplements can be taken together or separately, usually with a meal to enhance absorption, and it is advisable to continue this regimen as part of your daily routine indefinitely unless advised otherwise by a healthcare provider.

Description

Vitamin D plus calcium supplements typically combine vitamin D, often sourced from sunlight exposure or dietary sources, with calcium, primarily found in dairy products and leafy greens. This combination is used to promote bone health, reduce the risk of osteoporosis, and support overall musculoskeletal well-being.

How it helps

In a trial of 70 women with gestational diabetes at 24-28 weeks of pregnancy, supplementation with vitamin D (500-1000 IU/day) and calcium (500-1000 mg/day) for 6 weeks lowered fasting glucose [R].

However, genetically predicted higher serum calcium levels may be associated with an increased risk for diabetes [R].

55



Jiaogulan (Gynostemma Pentaphyllum)

IMPACT

2 / 5

EVIDENCE

1 / 5

How to implement

Take a capsule of jiaogulan (gynostemma pentaphyllum) containing 450 mg to 500 mg, three times a day with meals. Continue this routine daily for best results.

TYPICAL STARTING DOSE
1350 mg

Description

Jiaogulan, often referred to as the "immortality herb," is an herb used in traditional Chinese medicine for its potential adaptogenic and antioxidant properties. Some research suggests it may support overall well-being and longevity, but more studies are needed to confirm these effects.

[Gynostemma](#) (*Gynostemma pentaphyllum*), also called jiaogulan, is a climbing vine native to Southeast Asia. It is used in traditional Chinese medicine for [\[R\]](#):

- High cholesterol
- Diabetes

People call it the "poor man's [ginseng](#)" because it may have similar benefits but cost less than Panax (Asian) ginseng [\[R\]](#), [\[R\]](#).

How it helps

Jiaogulan helps lower fasting glucose levels by increasing insulin sensitivity and promoting glucose uptake into cells, hence decreasing blood sugar. It also boosts antioxidant activity, which protects against the damaging effects of high glucose levels.

In a [placebo-controlled trial of 24 patients with type 2 diabetes](#), supplementation with Gynostemma pentaphyllum (6 g/day) for 12 weeks **decreased fasting plasma glucose (by 3 mmol/L)** [\[R\]](#).

 PERSONALIZED TO YOUR GENES

Drinking jiaogulan tea may lower fasting glucose more in people with your [CETP](#) gene variant [\[R\]](#).

Drinking jiaogulan tea may lower fasting glucose more in people with your [APOE](#) gene variant [\[R\]](#).

YOUR GENETIC VARIANTS			
GENE	SNP	GENOTYPE	EVIDENCE
CETP	rs708272	AA	
APOE	rs429358	TT	

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Lycopene

IMPACT

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EVIDENCE

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How to implement

Take a lycopene supplement of 10 to 30 mg per day. It can be consumed with a fat-containing meal to enhance absorption. This supplementation can be ongoing daily to support overall health benefits such as heart health and antioxidant protection.

TYPICAL STARTING DOSE

10 mg

Description

Lycopene is a powerful antioxidant found in tomatoes and other red or pink fruits and vegetables. Consuming lycopene-rich foods may help reduce the risk of chronic diseases and support heart and prostate health.

[Lycopene](#) is a bright red substance that gives color to a number of fruits such as [\[R\]](#), [\[R\]](#):

- Tomato
- Watermelon
- Papaya
- Apricot

Lycopene has antioxidant properties. It may help support [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart health
- Prostate health
- Cognition

How it helps

Lycopene, a powerful antioxidant, can aid in regulating blood sugar levels, which may be beneficial for managing fasting glucose levels. It helps reduce oxidative stress on cells that is often elevated in individuals with high fasting glucose.

A meta-analysis of 11 trials (750 participants) showed a tendency towards reduced fasting blood glucose (FBG) levels, especially in type 2 diabetes patients (152 participants). Publication bias was absent. Lycopene intake may lower FBG [\[R\]](#).

However, in a review of 10 articles, it was found that after adjusting for other risk factors, the OR for developing DM2 was similar among the different levels of lycopene intake [\[R\]](#).

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Cranberry

IMPACT

1 / 5

EVIDENCE

3 / 5

How to implement

Consume one to two 8-ounce servings of unsweetened cranberry juice daily, or take 500 mg of cranberry supplements twice daily. Continue this practice consistently for at least several weeks to potentially observe benefits.

Description

Cranberries are known for their high antioxidant content and potential to promote urinary tract health by preventing bacterial adhesion. Consuming cranberries or cranberry products may help reduce the risk of urinary tract infections and provide antioxidant benefits.

Cranberries are fruits rich in vitamins, minerals, and antioxidants. They are available in different forms, including [\[R\]](#):

- Dried fruits
- Juice
- Powder
- Pills

How it helps

Cranberries are rich in fiber that can slow the absorption of sugars into the bloodstream. Because they are also rich in sugars, they must be consumed in moderation.

A [meta-analysis of 22 studies](#) concluded that consuming cranberries **reduces fasting glucose (by 17.72 mg/dL)**. However, two other meta-analyses failed to find this benefit of cranberries [\[R\]](#), [\[R\]](#), [\[R\]](#).

How to implement

TYPICAL STARTING DOSE

500 mg

Description

Cumin (*Cuminum cyminum* L.) is a flowering herb cultivated in the Middle East, India, China, and the Mediterranean area [R].

- Diarrhea
- Stomachache
- High cholesterol
- Diabetes

How it helps

A meta-analysis of 8 studies found that supplementation with cumin lowers fasting blood sugar (by 1.4 mg/dL). However, another meta-analysis didn't find this benefit [R, R].

How to implement

Description

- Vitamin C
- Folate
- Flavonoids

How it helps

In healthy adults, strawberry jams and drinks, when consumed, did not significantly affect postprandial glucose levels in some studies. However, consuming a strawberry drink before a meal improved insulin sensitivity and lowered interleukin-6 levels in another study. Japanese strawberry jams had no significant impact on postprandial glucose levels in a separate trial [R, R, R].

60



Decaffeinated Coffee

IMPACT

1 / 5

EVIDENCE

2 / 5

How to implement

Replace your regular coffee intake with decaffeinated coffee. Aim to consume it in the same quantities and at the same times you would normally drink caffeinated coffee. This adjustment can be made indefinitely to reduce caffeine intake without altering your routine significantly.

Description

Decaffeinated coffee allows individuals to enjoy the flavor and aroma of coffee without the stimulating effects of caffeine, making it a suitable choice for those who are sensitive to caffeine or want to reduce their intake. It can still provide antioxidants and potential benefits like improved alertness.

How it helps

Decaffeinated coffee helps in managing high blood sugar levels because it contains polyphenols, plant-based substances known to help the body use insulin efficiently. Additionally, it can reduce cravings for sugary foods and beverages by making you feel full.

In a comprehensive analysis of 28 prospective studies, coffee consumption displayed a dose-dependent inverse association with type 2 diabetes risk. Both caffeinated and decaffeinated coffee were linked to reduced risk, suggesting a beneficial effect [\[R\]](#).

Data from 18 studies revealed that each additional daily cup of coffee was linked to a reduced relative risk of diabetes. This inverse association was also found with decaffeinated coffee and tea [\[R\]](#).

Green coffee extract supplementation, particularly in doses of 180 to 376 mg of chlorogenic acid, reduced waist circumference, and triglyceride levels, improved high-density lipoprotein-cholesterol levels, and lowered blood pressure. Decaffeinated coffee (510.6 mg chlorogenic acid) reduced fasting blood glucose [\[R\]](#).

In a study with 17 men, decaffeinated coffee led to higher insulin sensitivity compared to water. Regular coffee with sugar had no significant impact on glucose, insulin, or incretin hormones. Both regular and decaffeinated coffee did not alter incretin hormone levels [\[R\]](#).

Please note: polyphenols and tannins from coffee may bind to iron and form insoluble complexes, which reduces iron absorption in the gut. If you have anemia, consult your healthcare provider before using coffee or coffee supplements.

How to implement

Description

How it helps

In literature review, most studies showed positive correlations of phthalates, especially Σ DEHP, with homeostasis model assessment of insulin resistance and fasting glucose [R].

How to implement

TYPICAL STARTING DOSE
100 mg

Description

Coenzyme Q10 (CoQ10) is a compound that helps enzymes work better. By doing so, CoQ10 helps improve [R, R, R, R]:

- Energy levels
- Antioxidant protection
- Heart health
- Muscle strength
- Blood sugar control

The amount of CoQ10 made by your body decreases as you get older. Luckily, you can also get it from food or supplements. Good sources of CoQ10 include [R](#), [R](#)]:

- Organ meats
- Fatty fish
- Whole grains

How it helps

CoQ10, an essential enzyme in the body, improves insulin sensitivity and helps regulate blood sugar levels. This might be beneficial in managing fasting glucose levels effectively.

In a preliminary meta-analysis of 14 studies on Co-Q10 supplementation's effect on FBG, a slight but not statistically significant decrease was observed (SMD: -0.28 mg/dL, 95% CI: -0.12, 0.04) with high heterogeneity. After removing three studies, heterogeneity was eliminated, and a slight significant decrease in FBG was found (SMD: -0.20 mg/dL, 95% CI: -0.38, -0.02). Co-Q10 did not significantly affect HbA1c and fasting insulin levels [R].

In a study including 18 studies with 19 study arms, CoQ10 was found to significantly reduce blood glucose levels (BGL) but had no significant effect on blood lipid levels (HL). Lower CoQ10 doses (<200 mg/d) and shorter study durations were associated with a more positive effect on BGL, although significant heterogeneity was observed in the BGL arms [R].

How to implement

TYPICAL STARTING DOSE

100 mg

Description

- Complications of high blood sugar
- Skin aging
- Weight loss
- Carpal tunnel syndrome

How it helps

The findings of another meta-analysis showed that ALA supplementation among patients with metabolic diseases significantly decreased fasting glucose, insulin, homeostasis model assessment of insulin resistance, and hemoglobin A1c [R].

How to implement

TYPICAL STARTING DOSE
30 billion CFU

Description

Probiotics are live beneficial bacteria and yeasts that can support gut health and digestive function when consumed as supplements or found in fermented foods like yogurt and sauerkraut. They may be beneficial to gut health, immune function, blood sugar, and mood.

- Maintaining gut health
- Supporting a healthy immune system
- Improving your mood
- Helping to maintain healthy blood sugar

Prebiotics are certain types of fiber and other complex carbs that serve as food for gut bacteria. **They support gut health by helping boost the activity and growth of “good” bacteria** [R, R].

- Oligo-fructose
- Oligo-galactose
- Inulin

Mixtures of probiotics and prebiotics are known as **synbiotics** [R].

How it helps

Consuming *L. casei* Shirota maintained normal insulin sensitivity and fasting glucose levels during a high-fat diet in a non-placebo-controlled trial. In a placebo-controlled trial with type 2 diabetes patients, *L. casei* supplementation improved fasting blood sugar [R, R].

65



Allulose

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

For incorporating allulose as a supplement, use it as a sugar substitute in your daily diet. You can add it to coffee, tea, smoothies, or use it for baking and cooking. Aim for no more than about 30 grams per day to avoid digestive discomfort, as excessive consumption can lead to bloating or diarrhea.

TYPICAL STARTING DOSE

30 g

Description

Allulose is a low-calorie sugar substitute found naturally in small quantities in certain foods, including wheat and raisins. It is used as a sweetener in some products and is believed to have minimal impact on blood sugar levels.

How it helps

Allulose can help lower fasting glucose levels. This is because it acts like dietary fiber, which slows the absorption of sugar into the blood, helping keep glucose levels stable.

Multiple studies and meta-analyses suggest that allulose, when consumed in doses of 5-10 g, can reduce fasting and postprandial glucose levels in individuals without diabetes. However, it does not significantly affect HbA1c or fasting insulin levels. Additionally, allulose (10-25 g/day) lowered blood glucose levels in healthy participants and postprandial blood glucose response (by 8%) in individuals with type 2 diabetes [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#).

66



Alpha-Linolenic Acid (ALA)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate foods high in alpha-linolenic acid (ALA) into your daily diet. This means eating about a tablespoon (14 grams) of flaxseeds or chia seeds, a quarter cup (30 grams) of walnuts, or using one tablespoon of flaxseed oil every day.

Description

Alpha-linolenic acid (ALA) is a type of omega-3 fatty acid found in plant-based sources like flaxseeds, chia seeds, and walnuts. It is essential for maintaining heart and brain health and is considered a healthy dietary fat.

How it helps

Alpha-Linolenic Acid (ALA) can help reduce fasting glucose levels as it enhances insulin sensitivity, allowing your body to use glucose more effectively. Plus, a steady ALA intake can slow down the conversion of carbohydrates into sugar, thus controlling elevated blood sugar levels.

In a meta-analysis of 8 trials (with a total of 212 participants), it was found that a median daily intake of 4.4 g of ALA for 3 months did not affect HbA1c levels. Similarly, a median ALA dose of 5.4 g/day did not significantly impact FBG or FBI, with the results showing considerable heterogeneity [\[R\]](#).

In a review of 14 studies with a minimum treatment duration of four weeks, ALA showed a significant effect on three out of 32 outcomes. Specifically, ALA led to reductions in fibrinogen concentrations by 0.17 micromol/l (95% CI: -0.30 to -0.04, p = 0.01) and fasting plasma glucose by 0.20 mmol/l (95% CI: -0.30 to -0.10, p < 0.01) [\[R\]](#).

67



American Ginseng

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 200-400 mg of American ginseng extract daily, preferably with a meal to enhance absorption. This regimen can be followed continuously for up to 12 weeks, after which a break or reassessment of the need to continue should be considered.

TYPICAL STARTING DOSE

200 mg

Description

American ginseng is a perennial herb native to North America, particularly regions of the United States and Canada. It is valued for its potential health benefits, including immune system support, stress reduction, and enhanced cognitive function, with the primary active compounds being ginsenosides.

[Ginseng](#) is a plant people use to improve [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Sexual function
- Immunity
- Fatigue
- Attention

There are many different types of ginseng. The most common ones are [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Korean red ginseng, also called Asian ginseng (*Panax ginseng*)
- [American ginseng](#) (*Panax quinquefolius*)
- Chinese notoginseng, also called Sanchi (*Panax notoginseng*)

How it helps

In a placebo-controlled trial of 24 patients with type 2 diabetes, American ginseng (3 g/day for 8 weeks) lowered HbA1c (by 0.29%), fasting glucose (by 0.71 mmol/L), and systolic blood pressure (by 5.6 mmHg), while increasing nitrates/nitrites and the HDL:LDL ratio [\[R\]](#).

In a non-placebo-controlled trial of 84 patients with coronary heart disease and blood glucose abnormality, American ginseng used as an add-on to conventional medicine was more effective at lowering fasting glucose [\[R\]](#).

68



Black Chokeberry

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate black chokeberry (*Aronia melanocarpa*) in your diet by consuming 100-200 grams of fresh berries daily. If using a concentrated form like juice or extracts, follow the manufacturer's instructions, usually around 100 ml of juice or 500 mg of extract per day, for at least 8-10 weeks to observe potential health benefits.

Description

Black chokeberry is a fruit known for its high content of antioxidants and potential health benefits. It may support cardiovascular health and provide immune system support when incorporated into a balanced diet.

How it helps

Black Chokeberry is rich in antioxidants and anthocyanins, which help reduce blood glucose levels and increase insulin sensitivity, making it beneficial for managing high blood sugar. This fruit's powerful constituents aid in slowing down the digestion of sugars, resulting in a gradual release and preventing sudden blood sugar spikes.

In a non-placebo-controlled trial of 41 patients with type 1 diabetes, consuming black chokeberry juice (200 mL/day) for 3 months **lowered fasting glucose (by 4.18 mmol/L), HbA1c, and TC (by 1.4 mmol/L)** [\[R\]](#).

In a placebo-controlled trial of 143 patients with metabolic syndrome, supplementation with black chokeberry extract for 4 weeks **decreased LDL-C** [\[R\]](#).

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Celery Seed

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a celery seed supplement capsule of 600-1000 mg daily with a glass of water, preferably with a meal to aid absorption and minimize potential stomach discomfort. Continue this regimen for at least 4-6 weeks to evaluate its effects on your condition.

TYPICAL STARTING DOSE

600 mg

Description

Celery seed extract is a natural supplement derived from the seeds of the celery plant, known scientifically as *Apium graveolens*. This extract is rich in various bioactive compounds, including flavonoids, linoleic acid, and volatile oils like limonene and selinene. These compounds contribute to its potential health benefits, which may include anti-inflammatory properties, support for joint health (often used in treating conditions like arthritis), and assistance in managing blood pressure levels. Celery seed extract is available in various forms, including capsules, tablets, and tinctures, and is often used in traditional medicine for its diuretic and antispasmodic effects.

How it helps

Celery seed contains antioxidants that help improve insulin sensitivity, reducing blood sugar levels. They may also lower inflammation and oxidative stress, which play a big part in developing insulin resistance.

In a placebo-controlled trial of 51 patients with hypertension, supplementation with celery seed extract (1.34 g/day) for 4 weeks reduced fasting glucose by 10,57 mg/dL [R].

70



Rutin

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500mg of rutin supplement daily, preferably with a meal to enhance absorption. Continue this supplementation regularly for at least 4 weeks to evaluate its benefits on your health, as effects may take some time to become noticeable.

Description

Rutin is a flavonoid found primarily in citrus fruits, buckwheat, and tea, and is known for its antioxidant and anti-inflammatory properties. It may support cardiovascular health and promote strong blood vessels.

How it helps

A double-blind, placebo-controlled trial with 50 type 2 diabetes mellitus patients found that rutin (500 mg/day for 3 months) decreased fasting blood glucose, insulin, HbA1c, HOMO-IR, LDL-c, TG, VLDL, total cholesterol, LDL-c:HDL-c ratio, atherogenic index of plasma (AIP), IL-6, and malondialdehyde (MDA), while increasing HDL-c, quantitative insulin sensitivity check index (QUICKI), BDNF, and total antioxidant capacity (TAC). Hence rutin may improve metabolic parameters, BDNF, and inflammatory and oxidative stress factors in T2DM patients [\[R\]](#).

In a prospective, randomized, controlled study conducted on 53 type 2 diabetes patients. rutin with vitamin C and vitamin C only reduced fasting blood glucose and LDL- and total cholesterol [\[R\]](#).

Rutin may help by enhancing insulin sensitivity.

Please note: *rutin may inhibit the production of the thyroid hormone T4 (thyroxine). Individuals with thyroid disorders, particularly hypothyroidism or low T4 levels, should exercise caution when using rutin and always consult with a healthcare provider before taking this supplement [\[R\]](#).*

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Lactobacillus Casei

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a supplement containing Lactobacillus casei daily, with a dosage recommended by the product's manufacturer or a healthcare professional. The specific amount can vary, but it is commonly found in doses around 10 billion colony-forming units (CFUs). Continue this regimen for at least 4 weeks to observe potential health benefits.

TYPICAL STARTING DOSE
10 billion CFU

Description

Lactobacillus casei is a probiotic bacterium known for its potential to support gut health and immune function. It contributes to a balanced gut microbiome and may help alleviate digestive issues like diarrhea.

[Lactobacillus casei](#) is a [probiotic](#) bacterium found in fermented foods (e.g., cheese), as well as in the reproductive and gastrointestinal tracts of humans and other animals [\[R, R\]](#).

People mainly take *L. casei* to support a healthy gut microbiota [\[R\]](#).

How it helps

L. casei can improve your gut health. Research shows a healthy gut can affect insulin resistance, an underlying cause of high blood sugar.

Consuming *L. casei* Shirota maintained normal insulin sensitivity and fasting glucose levels during a high-fat diet in a non-placebo-controlled trial. In a placebo-controlled trial with type 2 diabetes patients, *L. casei* supplementation improved fasting blood sugar [\[R, R\]](#).

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Quercetin

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 250-1000 mg of quercetin supplement daily with a glass of water, preferably with a meal to aid in its absorption.

TYPICAL STARTING DOSE

200 mg

Description

Quercetin is a natural plant flavonoid found in various foods, particularly in fruits and vegetables like apples, onions, and broccoli. It is used as a dietary supplement and is valued for its potential antioxidant and anti-inflammatory properties.

[Quercetin](#) is a **plant-based antioxidant**. It supports the immune system and helps lower inflammation [\[R\]](#), [\[R\]](#).

Good sources of quercetin include [\[R\]](#):

- Apples
- Onions
- Tea

People mainly use quercetin supplements to relieve allergies [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

A meta-analysis of 10 studies found that quercetin supplementation did not affect fasting plasma glucose, homeostasis model of assessment-estimated insulin resistance, and hemoglobin A1c levels. In subgroup analysis, quercetin supplementation significantly **reduced fasting glucose in studies with a duration of ≥8 weeks and using quercetin in dosages of ≥500 mg/day** [\[R\]](#).

Quercetin may help by enhancing insulin sensitivity and glucose uptake, hence maintaining a stable blood sugar level.

Please note: *quercetin may inhibit the production of the thyroid hormone T4 (thyroxine). Individuals with thyroid disorders, particularly hypothyroidism or low T4 levels, should exercise caution when using quercetin and always consult with a healthcare provider before taking this supplement* [\[R\]](#).

Please note: *quercetin may interfere with iron absorption due to its iron-chelating properties, potentially exacerbating anemia or making it harder to manage. If you have anemia, consult your healthcare provider before using quercetin supplements* [\[R\]](#).

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Avoid Lead Exposure

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Prevent lead exposure by using cold water for drinking and cooking, regularly cleaning dust from windowsills and floors, and ensuring that your home's paint is not chipping if it was built before 1978. For occupations involving potential lead exposure, use protective gear and follow safety protocols. Test your home for lead if it's old or you're concerned about contamination.

Description

Lead is a heavy metal. It is naturally found in the environment in small amounts [\[R\]](#), [\[R\]](#).

Exposure to lead can cause it to build up in the body. A buildup of lead can contribute to oxidative stress and cell damage. This is called **lead poisoning** [\[R\]](#), [\[R\]](#).

Lead is no longer used in the manufacturing of some products like gasoline and paint. However, it can still be found in some pipes, batteries, and the wall paint of older homes [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

A study of 34,814 male subjects associated lead exposure with annual changes in fasting blood sugar [\[R\]](#).

Lead toxicity may impair the body's ability to produce and use insulin.

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Diaphragmatic Breathing

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice diaphragmatic breathing for 10-15 minutes per day. Sit or lie down in a comfortable position, place one hand on your chest and the other on your belly. Breathe in slowly through your nose, ensuring your belly moves out more than your chest. Exhale slowly through your mouth or nose, consciously relaxing the belly. Repeat this process, focusing on the movement of your belly rather than your chest.

TYPICAL STARTING DOSE

10 minutes

Description

Diaphragmatic breathing, also known as deep breathing, can help reduce stress and anxiety by activating the body's relaxation response. It promotes better oxygen exchange, reduces muscle tension, and supports overall mental and physical well-being.

How it helps

Diaphragmatic breathing can help in reducing stress and inducing relaxation, which can aid in controlling high blood sugar levels. It works by activating your body's relaxation response, which helps your cells uptake insulin better, thus leading to lower sugar levels in the blood.

In a non-placebo-controlled trial of 100 patients with type 2 diabetes, receiving training and home practice of diaphragmatic breathing and systematic relaxation for 6 months as an add-on to antiglycemic treatment decreased HbA1c and stress. In a non-placebo-controlled trial of 60 pregnant women with gestational diabetes, practicing diaphragmatic breathing exercises 5 min/day for 30 days decreased fasting blood glucose and respiratory rate. A stress management program with diaphragmatic breathing (10 min) and progressive muscle relaxation (15 min) decreased HbA1c and perceived stress in a non-placebo-controlled trial of 53 patients with type 2 diabetes [\[R\]](#), [\[R\]](#), [\[R\]](#).

75



Perilla Oil

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 600-900 mg of perilla oil daily, ideally with meals to enhance absorption. This should be divided into two or three doses throughout the day. Continue this regimen for at least 8 to 12 weeks to evaluate its effectiveness.

TYPICAL STARTING DOSE

600 mg

Description

Perilla oil is an edible oil extracted from the seeds of the *Perilla frutescens* plant, which is native to Asia. It is rich in omega-3 fatty acids, particularly alpha-linolenic acid (ALA), and is known for its potential health benefits, including supporting heart health, reducing inflammation, and providing essential nutrients like vitamin E and omega-3s.

How it helps

Perilla oil contains polyunsaturated fat, which can beneficially alter your balance of fats and carbohydrates, thus helping regulate your fasting glucose. It's especially beneficial for people with impaired glucose metabolism, improving insulin resistance and reducing blood glucose levels.

A randomized double-blinded trial performed on 150 T2DM patients found that perilla oil (3 g/day for 6 months) **lowered fasting glucose and C-peptide** and increased erythrocyte C22: 5 n-6, ALA, DPA, n-6/n-3 PUFA, and AA/EPA levels [\[R\]](#).

In contrast, a randomized controlled trial in 156 type 2 diabetic patients with dyslipidemia found that perilla oil (3 g/day for 6 months) **did not change serum glucose, glycated hemoglobin, C peptide, insulin, or homeostasis model assessment-insulin resistance**. However, it did lower serum LDL-C and apolipoprotein B [(2.60±0.57) mmol/L,(0.96±0.23) g/L, respectively] compared with fish oil [\[R\]](#).

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Sage Extract

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take sage extract in supplement form, ideally in doses ranging from 300 to 600 mg daily, divided into 2 or 3 doses throughout the day. It is recommended to follow this regimen for at least 1 to 2 months to evaluate its effects on cognitive function and mood improvements.

TYPICAL STARTING DOSE

300 mg

Description

Common sage (*Salvia officinalis*) is an herb from the mint family. It is native to the Mediterranean region. The main compounds in sage extract include essential oils like thujone and cineole, which contribute to its flavor and potential benefit for sore throats and digestive issues [R].

People commonly use sage as a spice and a traditional remedy for [R, R]:

- Sore throat
- Mood
- Blood sugar and cholesterol control
- Heavy sweating

How it helps

Sage extract may help lower fasting glucose levels by increasing insulin sensitivity and helping your body use glucose more effectively. Therefore, it may aid in the management of your condition.

In a placebo-controlled trial of 40 hyperlipidemic subjects with type 2 diabetes, supplementation with sage extract (500 mg, 3x/day) for 3 months lowered fasting glucose (by 32.2%) and HbA1c (by 22.7%) [R].

Please note: *rosmarinic acid from sage may inhibit the production of the thyroid hormone T4 (thyroxine). Individuals with thyroid disorders, particularly hypothyroidism or low T4 levels, should exercise caution when using sage extract and always consult with a healthcare provider before taking this supplement* [R].

77



Yoga Nidra

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice Yoga Nidra for 30-45 minutes per session. Choose a quiet, comfortable place where you won't be disturbed. Aim to do this 3-5 times a week, preferably in the evening before bed to help improve sleep quality and reduce stress.

TYPICAL STARTING DOSE

30 minutes

Description

Yoga nidra is a guided meditation and relaxation practice that originates from yoga traditions. It is used for reducing stress, improving sleep quality, and promoting mental relaxation, often involving deep introspection and heightened awareness.

How it helps

In a non-placebo-controlled trial of 41 patients with type 2 diabetes, practicing yoga nidra (30 min/day) for 90 days lowered fasting glucose (by 21.3 mg/dL) [R].

Yoga nidra promotes relaxation and stress reduction, which can help lower blood sugar levels.

78



Neem

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 300-500 mg of neem extract daily with water, preferably after a meal. Do this for up to 10 weeks to help manage conditions like gastric ulcers and skin health. Always consult with a healthcare provider before starting any new supplement regimen.

TYPICAL STARTING DOSE

300 mg

Description

Neem is a medicinal plant from the mahogany family of trees, known for its antibacterial and anti-inflammatory properties, often used in skincare and herbal remedies to alleviate skin conditions, support oral health, and promote overall well-being.

Neem (*Azadirachta indica*) is a member of the mahogany family of trees. It is native to parts of Asia [R].

Neem may help support gum health and improve ulcers [R].

How it helps

In a placebo-controlled trial of 80 patients with metabolic syndrome, supplementation with neem leaf and twig extract (125-500 mg/day) for 12 weeks improved fasting blood glucose, postprandial blood sugar, insulin resistance, and HbA1c, as well as endothelial function and most markers of inflammation and oxidative stress [R].

Neem may help by improving insulin sensitivity and promoting the health of insulin-producing pancreatic cells.

79

Avoid Acrylamide

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Reduce your intake of fried, baked, or roasted high-carbohydrate foods, such as potato chips, fries, and toast, to minimal levels. Opt for boiling, steaming, or microwaving these foods instead. When cooking at high temperatures, aim to keep the temperature below 248 degrees Fahrenheit (120 degrees Celsius) to prevent the formation of acrylamide.

Description

Avoiding acrylamide involves minimizing exposure to this chemical compound, which can form in certain foods when cooked at high temperatures. Reducing acrylamide intake may lower the risk of potential health concerns associated with its consumption.

How it helps

Acrylamide exposure may raise fasting glucose levels by impairing insulin function and damaging pancreatic beta cells, which are responsible for insulin production. This disruption can lead to insulin resistance and a reduced ability to regulate blood sugar levels, resulting in elevated fasting glucose levels.

A [study of 3,270 participants](#) associated exposure to acrylamide with **higher fasting glucose** [\[R\]](#).

80

Chicory

IMPACT1 / 5

EVIDENCE1 / 5

Description

Chicory is a nutrient-rich vegetable that has been shown to have a number of health benefits. It is a good source of fiber, vitamin K, and antioxidants. Chicory may also help to improve digestion, lower blood sugar levels, and boost the immune system.

How it helps

In a placebo-controlled trial of 46 patients with type 2 diabetes mellitus, enriched chicory inulin supplementation led to significant reductions in fasting serum glucose, HbA1C, AST, and ALP concentrations. It also improved systolic and diastolic blood pressures and increased serum calcium [\[R\]](#).

Consuming yogurt with chicory inulin jelly or chicory oligofructose reduced postprandial glucose in a non-placebo-controlled trial of 42 healthy volunteers [\[R\]](#).

81



Hatha Yoga

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Practice Hatha Yoga for 60 minutes at least twice a week. Choose a quiet, comfortable space and consider guided sessions for beginners or those unfamiliar with the poses. Consistency over a period of months to years is beneficial for appreciating its full effects.

TYPICAL STARTING DOSE

1 hour

Description

Hatha yoga is a gentle and accessible form of yoga that combines physical postures, breathing exercises, and meditation. Practicing hatha yoga regularly can promote flexibility, stress reduction, and overall physical and mental well-being.

How it helps

Hatha Yoga can help regulate fasting glucose levels by reducing stress and stimulating the pancreas, which promotes insulin production. Regular practice can improve your body's sensitivity to insulin, preventing spikes in blood sugar.

In a study with 173 Chinese adults, the yoga group showed significant improvements compared to the control group, including reduced waist circumference, fasting glucose, triglycerides, and MetS z score. Yoga also enhanced overall health perceptions, physical well-being, and social functioning in quality of life, with no significant changes in blood pressure or HDL cholesterol [\[R\]](#).

82



Restorative Yoga

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Engage in restorative yoga sessions for 20-30 minutes, at least three times a week. Choose a quiet, comfortable space where you won't be disturbed, using props such as yoga mats, bolsters, and blankets to support your body in relaxing poses.

TYPICAL STARTING DOSE

30 minutes

Description

Restorative yoga is a gentle and therapeutic form of yoga that involves holding poses for extended periods to promote relaxation, reduce stress, and improve flexibility and joint mobility.

How it helps

In a non-placebo-controlled trial of 135 patients with metabolic syndrome, practicing restorative yoga for 48 weeks decreased fasting glucose (by 0.35 mmol/L), as well as insulin and HbA1c [\[R\]](#).

Restorative yoga helps reduce stress, a key risk factor for elevated fasting glucose levels. It can improve insulin sensitivity, helping your body regulate glucose levels effectively.

83



Carnosine

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 500 mg of carnosine twice daily with meals. Continue this regimen for at least 2 to 4 weeks to start noticing benefits. It can be taken as a capsule or powder form mixed with water or juice.

TYPICAL STARTING DOSE

1000 mg

Description

Carnosine is a naturally occurring compound found in muscle tissues and certain foods. It is believed to have antioxidant properties and may support muscle function and overall cellular health.

[Carnosine](#) (β -alanine-l-[histidine](#)) is a compound naturally produced by the body. We also get it from eating meat and fish. Carnosine is abundant in our [\[R\]](#), [\[R\]](#):

- **Muscles**
- Heart
- Brain
- Nose

Carnosine has several important functions in the body, including [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Being an antioxidant
- Improving muscle function
- Removing toxic metals

During exercise, **carnosine may prevent muscle fatigue and boost athletic performance**. It may also help improve sugar metabolism [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

Carnosine has antioxidant properties that can protect your body from damage by harmful molecules called free radicals, and it helps regulate blood sugar levels. Therefore, taking Carnosine can potentially aid in managing your fasting glucose levels by reducing oxidative stress and improving glucose control.

A review of 20 studies (4 human, 16 rodent) on carnosine and beta-alanine supplementation suggests a decrease in fasting glucose, HbA1c, HOMA-IR, and fasting insulin levels, with moderate certainty in human outcomes [\[R\]](#).

Out of 14 selected papers, 9 qualified for meta-analysis, suggesting L-carnosine's potential therapeutic effects in age-related diseases. In diabetes mellitus, it led to significant reductions in HbA1c and fasting blood sugar, while in neurodegenerative disorders, it improved Wechsler Memory Scale Logical Memory 2 scores [\[R\]](#).

A meta-analysis of four RCTs involving 184 participants found that carnosine intervention for at least 2 weeks reduced HbA1C levels (-0.92%) but didn't significantly affect HOMA-IR, cholesterol, fasting blood sugar, or HDL-C [\[R\]](#).

84



Aerobic Exercise (Cardio)

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Engage in at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity activity each week. Distribute this time over at least 3 days per week, avoiding consecutive days of vigorous exercise to allow for recovery.

TYPICAL STARTING DOSE

1 hour

Description

Engaging in regular aerobic exercise, such as running, swimming, or cycling, offers numerous health benefits, including improved cardiovascular fitness, weight management, and mood enhancement. It supports overall physical and mental well-being while reducing the risk of chronic diseases.

Cardio, short for cardiovascular exercise, is any type of physical activity that temporarily increases your heart rate. Examples include **running, cycling, swimming, and brisk walking**.

Regular cardio exercise has many benefits for your overall health. It can help lower your risk of heart disease and diabetes, support weight loss, and improve your mood and energy levels. To get the most out of cardio, try to do it for at **least 30 minutes, 3-5 times a week**.

Interval training is a type of cardio that combines periods of high-intensity training with brief rest periods.

How it helps

Aerobic exercises help to lower fasting glucose levels by increasing your body's insulin sensitivity, meaning your cells are better able to use the available sugar in your bloodstream. Additionally, exercise helps muscles use blood sugar for energy and muscle contraction, reducing excess glucose in the blood.

A [meta-analysis of 13 studies](#) concluded that aerobic exercise **significantly reduces HbA1c and HOMA-IR in prediabetic individuals** [\[R\]](#).

Another [meta-analysis \(11 studies\)](#) found that structured exercise programs **reduce insulin resistance, HbA1c, fasting glucose and insulin, and BMI in patients with type 2 diabetes** [\[R\]](#).

In overweight and obese youth, aerobic exercise (over 60 min/session, at least 3 sessions/week for 12 weeks) **decreases insulin (by 4.52µU/mL), HOMA-IR, fasting glucose, and body fat** according to [2 meta-analyses \(the largest one with 17 studies\)](#) [\[R\]](#), [\[R\]](#).

85



Ecklonia Cava

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take a supplement of Ecklonia Cava extract, typically available in capsule format, with a standard dose ranging between 100-400 mg daily. It can be taken with or without food, but consistency in timing can help maintain stable levels in your body. It's generally recommended to start with the lower end of the dosing spectrum and adjust based on personal tolerance and efficacy. Continue taking daily for at least a few weeks to gauge the full effect.

TYPICAL STARTING DOSE

100 mg

Description

Ecklonia cava is a type of brown seaweed often used in supplements for its potential antioxidant and anti-inflammatory properties, which may support cardiovascular health and overall well-being.

Ecklonia cava, also known as “sea trumpet”, is a brown seaweed that grows along the coasts of Korea and Japan. People use it as a food, fertilizer, and supplement [\[R\]](#), [\[R\]](#).

Ecklonia cava is traditionally used to fight [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Urinary diseases
- Hemorrhoids
- Constipation

How it helps

A 12-week oral supplementation of Ecklonia cava polyphenols in overweight Korean individuals significantly decreased BMI, body fat ratio, waist circumference, waist/hip ratio, total cholesterol, low-density lipoprotein (LDL) cholesterol, total cholesterol/high-density lipoprotein (HDL) cholesterol, and atherogenic index. The high-dose group also showed significant decreases in serum glucose and systolic blood pressure. Ecklonia cava may help by improving insulin sensitivity [\[R\]](#), [\[R\]](#).

86



Bananas

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate 1-2 bananas into your daily diet. Bananas can be eaten as a standalone snack, added to cereal, oatmeal, or smoothies, or used as an ingredient in baking. Aim to include them regularly for ongoing dietary benefits.

Description

Bananas are a nutrient-rich fruit packed with potassium, fiber, and essential vitamins. They are a convenient and healthy snack option that can help support heart health, digestive regularity, and overall well-being.

Bananas are a good source of vitamins B6 and C, as well as numerous minerals, including potassium, copper, and magnesium. A single banana provides 0.4 mg of vitamin B6 or 25%DV.

How it helps

Bananas are rich in fiber, which helps slower digestion, thus slowing down the rise in blood glucose levels. They also contain essential vitamins and minerals like potassium, which aids in proper function of the body's cells, tissues, and organs ensuring overall health.

In a study involving hypercholesterolemic and type 2 diabetic subjects, daily consumption of 250 or 500 grams of banana for 12 weeks led to significant reductions in fasting blood glucose and LDL-cholesterol/HDL-cholesterol ratio in hypercholesterolemic individuals. For diabetic patients, blood glucose and lipid changes were not statistically significant, but there was a significant increase in plasma adiponectin levels [\[R\]](#).

87



Mastic Gum

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 350-1000 mg of mastic gum in capsule form daily, usually divided into two doses - morning and evening, with a glass of water. Follow these instructions for at least two weeks to see improvements in digestive health.

TYPICAL STARTING DOSE
350 mg

Description

Mastic gum is a natural resin with potential digestive health benefits. It's believed to support gastrointestinal comfort and may help alleviate symptoms of conditions like indigestion and acid reflux.

[Mastic](#) is a resin from the mastic tree. The mastic tree is native to the Greek island of Chios [\[R\]](#), [\[R\]](#).

Mastic is consumed as a chewing gum, used in cosmetics, and added to foods and drinks as a sweetener. People also take it to potentially help with gut problems [\[R\]](#).

How it helps

In a study of 156 volunteers, daily consumption of 1 g of crude Chios mastic gum reduced total cholesterol and fasting plasma glucose after 8 weeks. The effect was more pronounced in overweight and obese individuals. Polymer-free mastic and powder mastic had no significant impact on these parameters, nor did they affect LDL, HDL, triglycerides, uric acid, or CRP levels [\[R\]](#).

In a study of 133 subjects aged over 50, those in the high-dose group consuming 5 g of mastic powder daily experienced significant reductions in serum total cholesterol, LDL, total cholesterol/HDL ratio, lipoprotein (a), apolipoprotein A-1, apolipoprotein B, ALT, AST, and GGT levels [\[R\]](#).

Mastic gum may help by slowing down the digestion process, leading to a lower glucose release and absorption rate.

88



Dragon Fruit

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate dragon fruit into your diet by eating it raw or adding it to salads, smoothies, or yogurt. Aim for consuming dragon fruit 2-3 times a week to enjoy its benefits. Simply slice it in half and scoop out the flesh to eat.

Description

Dragon fruit is a colorful tropical fruit rich in antioxidants, vitamins, and fiber. Consuming dragon fruit as part of a balanced diet can support overall nutritional wellness and may offer benefits such as improved digestion and skin health.

How it helps

Dragon fruit is high in fiber, which can slow down the absorption of sugar and stabilize blood glucose levels, helping to manage fasting glucose levels. Its antioxidants also have anti-inflammatory properties that may improve insulin resistance, an issue often seen in patients with high fasting glucose.

A [meta-analysis of 4 trials and 36 participants](#) concluded that eating dragon fruit **reduces fasting glucose in prediabetic subjects (by 15.1 mg/dL) but not in type 2 diabetic patients** [R].

89



Laughter Therapy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Dedicate at least 15-30 minutes a day to watch, listen to, or participate in activities that make you laugh, such as watching a comedy show, attending a stand-up comedy event, or engaging in laughter yoga sessions. Consistently incorporate these laughter-inducing activities into your daily routine for an ongoing period to harness the health benefits of laughter.

TYPICAL STARTING DOSE

30 minutes

Description

Laughter therapy has been shown to improve cardiovascular health, reduce stress, and boost the immune system. It can also help to improve mood, relieve pain, and increase social bonding.

How it helps

In a non-placebo-controlled trial of 60 obese women, receiving 12 laughter therapy sessions over 6 weeks reduced perceived stress, psychological stress response, fasting blood sugar, IL-6, and TNF-alpha [R].

Laughter therapy can stimulate your pancreas to release insulin, which assists in lowering your fasting glucose levels. Plus, it alleviates stress, which can indirectly influence blood sugar levels.

90



L-Citrulline

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1.5 to 5 grams of L-citrulline supplements per day, orally, with or without food. This dosage can be taken all at once or divided into two to three smaller doses throughout the day. It's generally recommended to start at the lower end of the dosage range and adjust based on your body's response.

TYPICAL STARTING DOSE

3 g

Description

L-citrulline is an amino acid that may help improve blood flow and reduce muscle soreness, making it a popular supplement for athletes and individuals with certain cardiovascular conditions. Its potential to enhance nitric oxide production supports vascular health and overall circulation.

[Citrulline](#) is an amino acid (protein building block). Citrulline can be found in foods like [R](#), [R](#), [R](#), [R](#), [R](#):

- Watermelon
- Pumpkins
- Cucumber
- Bitter melon

The body uses L-citrulline to produce nitric oxide, a compound that helps widen blood vessels. It is important for heart and sexual health [R](#), [R](#), [R](#).

L-citrulline is commonly used as supplement to support [R](#):

- Blood vessel health
- Muscle health
- Metabolic health
- Sexual health

How it helps

L-Citrulline may aid in the control of blood sugar levels by enhancing nitric oxide production, which helps to improve blood flow and insulin sensitivity. As a result, taking it could potentially help manage Fasting Glucose levels.

In a placebo-controlled trial of 54 patients with type 2 diabetes, supplementation with citrulline (3 g/day) for 8 weeks lowered serum levels of insulin, glucose, HbA1c, and HOMA-IR [R](#).

91



Fucoidan

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 300 mg of fucoidan supplement once daily, preferably with a meal to aid absorption. Continue this regimen for a minimum of four weeks to evaluate its effects on your health.

TYPICAL STARTING DOSE
300 mg

Description

Fucoidan is a compound found in certain brown seaweeds and marine plants, and it is consumed for its immune system support and anti-inflammatory effects.

How it helps

Fucoidan may help by increasing insulin sensitivity, making your cells better at absorbing and using sugar.

In a placebo-controlled trial of 42 patients with NAFLD, supplementation with low-molecular-weight fucoidan and high-stability fucoxanthin (275 mg LMF and 275 mg HSFx, 3x/day) for 24 weeks reduced liver fibrosis and steatosis, AST, ALT, total cholesterol, triglycerides, fasting glucose, HbA1c, IL-6, and IFN-gamma [R].

92



Okra

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take okra supplements in the form of capsules or powder. If using capsules, consume 1-2 capsules daily with water, preferably with a meal. If using powder, mix one teaspoon into a glass of water or into a smoothie once daily. Continue this routine for at least 8-10 weeks to observe potential health benefits.

Description

Okra is a flowering plant of the mallow family, rich in vitamins, minerals, and fiber, offering potential benefits for digestive health, blood sugar control, and overall nutrition.

How it helps

Okra is high in dietary fiber, which helps maintain blood glucose levels by slowing its absorption. Additionally, okra contains a compound called myricetin that can increase insulin sensitivity and therefore aid in glucose control.

In 2 placebo-controlled trials involving type 2 diabetes patients, supplementation with okra (in capsule or powder form) for 8 weeks led to improved glycemic control, including lower fasting blood sugar [R, R].

93



Hyperbaric Oxygen Therapy

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Schedule and attend sessions in a hyperbaric oxygen therapy chamber as your doctor prescribes, typically for about 60 to 90 minutes per session. The exact number of sessions required can vary based on the condition being treated, but it often ranges from 20 to 40 sessions, which may be conducted daily or a few times a week.

TYPICAL STARTING DOSE

90 minutes

Description

Hyperbaric oxygen therapy increases the amount of oxygen in the blood and tissues, which can help to improve circulation, reduce inflammation, and promote healing.

How it helps

In a non-placebo-controlled trial of 12 men with type 2 diabetes, receiving hyperbaric oxygen therapy for 2 hours decreased fasting blood glucose by 19% and increased insulin sensitivity by about one-third. The combination of hyperbaric oxygen therapy and autologous bone marrow stem cell transplantation (10 sessions over 180 days) decreased HbA1c, fasting glucose, and insulin requirements in a non-placebo-controlled trial of 23 patients with type 2 diabetes [R, R].

Please note: Hyperbaric oxygen therapy is a potentially dangerous procedure that should only be performed under medical supervision. People with pneumothorax or congestive heart failure are at especially high risk of adverse effects. Because highly concentrated oxygen can easily catch on fire, avoid potential fire sources around hyperbaric oxygen chambers, oxygen gas cylinders, tanks, and concentrators [R, R].

94



Figs

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate 2-3 fresh figs or 1/2 cup of dried figs into your daily diet. You can eat them as a standalone snack or add them to salads, cereals, and yogurt for additional flavor and health benefits. This dietary change should be maintained consistently for best results.

Description

Figs are a nutritious fruit packed with dietary fiber, vitamins, and minerals. They can aid in digestive health, support weight management, and provide essential nutrients like potassium and calcium.

How it helps

Figs are rich in dietary fiber, which can slow the absorption of sugar into your bloodstream and prevent spikes in blood glucose. This helps to maintain a more stable blood glucose level while fasting.

A double-blind study with 10 healthy adults found that fig extract containing abscisic acid significantly reduced glycemic index and insulinemic index values in a dose-dependent manner [\[R\]](#).

A [clinical trial in 10 insulin-dependent type-I diabetes mellitus \(IDDM\) patients](#) found that an oral fig-leaf decoction as a supplement to breakfast **lowered post-prandial glycemia** without pre-prandial differences and the **average insulin dose (by 12%)** [\[R\]](#).

95



Fasting Mimicking Diet

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Adopt a fasting mimicking diet for 5 consecutive days per month, consuming between 750 and 1,100 calories per day consisting mostly of plant-based soups, vegetables, nuts, seeds, and herbal teas. Ensure adequate hydration. Resume a normal, healthy diet for the remaining days of the month.

Description

The fasting mimicking diet is a dietary approach that involves cycles of fasting and calorie restriction to potentially promote longevity and metabolic health. It is currently an area of research interest for its possible health benefits.

How it helps

In a non-placebo-controlled trial of 40 patients with type 2 diabetes, following a fasting-mimicking diet for 6 months reduced insulin resistance, the albumin-to-creatinine ratio (only in patients with microalbuminuria), and soluble urokinase plasminogen activator receptor. In a non-placebo-controlled trial of 100 patients with type 2 diabetes, following a fasting-mimicking diet for 4 months lowered fasting glucose, 2-hour postprandial glucose, and HbA1c [\[R\]](#), [\[R\]](#).

This diet may help by initiating cellular processes like autophagy, which promotes the repair and rejuvenation of cells. Moreover, it also leads to a reduced calorie intake, assisting in healthier blood sugar control and subsequent improvement in fasting glucose.

96



Bacillus Clausii

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take Bacillus clausii as an oral probiotic supplement, usually found in liquid or capsule form. For adults and children, the typical dosage is one or two capsules (or one or two vials of liquid, if using that form) daily. The duration of use can vary; some may take it for a few weeks during or after antibiotic treatment, while others might use it for longer periods to support digestive health.

Description

Bacillus causii is a type of beneficial bacteria that can be found in probiotic supplements, potentially contributing to digestive health and a balanced gut microbiome.

How it helps

Bacillus clausii is predominantly used as a probiotic to support healthy gut flora which can indirectly influence the rate of sugar metabolism. However, there's no concrete evidence suggesting *Bacillus clausii* directly reduces high blood sugar levels.

Bacillus clausii may improve fasting glucose levels in several ways:

- Improved gut microbiota: It helps balance gut bacteria, potentially reducing inflammation and insulin resistance, contributing to better blood sugar control.
- Increased GLP-1 production: This gut hormone promotes insulin release and reduces glucagon (raises blood sugar), leading to lower fasting glucose.
- Enhanced short-chain fatty acid production: These gut-derived molecules improve insulin sensitivity and glucose utilization, potentially lowering fasting blood sugar levels.

In a placebo-controlled trial of 20 patients with type 2 diabetes, supplementation with *B. clausii* for 90 days lowered blood glucose, raised HDL-C, and improved intestinal microbiota profiles [R].

97



Beta-Alanine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 2-3 grams of beta-alanine supplement daily, ideally in divided doses throughout the day to minimize potential skin tingling sensations. This supplementation can be continued for at least 4 weeks to observe benefits in exercise performance and muscle endurance.

TYPICAL STARTING DOSE

2 g

Description

Beta-alanine is an amino acid that can enhance muscle endurance by increasing the body's buffering capacity against lactic acid accumulation during intense exercise. Supplementing with beta-alanine may help improve athletic performance and delay muscle fatigue.

How it helps

Beta-Alanine supplements can improve your muscle's endurance, which might indirectly help with blood glucose regulation. However, it's important to note, they don't specifically treat fasting glucose or diabetes.

Twenty studies, including 4 on humans and 16 on rodents, examined carnosine or beta-alanine supplementation. Evidence suggests it reduces fasting glucose, HbA1c, HOMA-IR, and fasting insulin in both humans and rodents with moderate certainty [\[R\]](#).

98



Myo-inositol

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 2 grams of myo-inositol supplement orally twice a day, preferably with meals to enhance absorption. This regimen should be followed daily for at least 6 months to observe significant benefits.

TYPICAL STARTING DOSE

4 g

Description

Myo-inositol is a naturally occurring compound that plays a role in various cellular functions. It is used in dietary supplements and is believed to have potential benefits for mental health, hormone regulation, and insulin sensitivity.

Inositol is a type of sugar that our bodies need to function. It was considered a vitamin (vitamin B8) until it was discovered that our bodies can make it from another common sugar, glucose [\[R\]](#).

[Myo-inositol](#) is the most common form of inositol. It plays a role in [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart health
- Normal blood sugar levels
- Mental health
- Cognitive function
- Reproductive health

Myo-inositol can convert to [D-chiro-inositol](#) in the body. These two forms of inositol are often combined in supplements. People use them to improve blood sugar control and PCOS [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

In a 12-month study with 80 postmenopausal women and metabolic syndrome, myo-inositol (2 g b.i.d) showed significant improvements in glucose, insulin, HOMA-IR, triglycerides, HDL cholesterol, and blood pressure compared to placebo, while BMI and waist circumference remained unchanged [\[R\]](#).

99



Brown Seaweed And Bladderwrack

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take a brown seaweed and bladderwrack supplement according to the product's instructions, typically around 500-1000 mg daily, with meals to reduce the risk of stomach upset. It's important to check the label for specific dosage recommendations. This supplement is usually taken for periods of up to two months followed by a break or as directed by a healthcare professional.

TYPICAL STARTING DOSE

500 mg

Description

Brown seaweed, such as kelp and wakame, is a nutrient-dense marine plant often used in Asian cuisine and dietary supplements. It's a natural source of essential minerals like iodine and may offer various health benefits, including thyroid support and potential antioxidant effects. Bladderwrack is a type of seaweed that has been used for its potential health benefits, including iodine content that supports thyroid function.

How it helps

In a placebo-controlled trial of 65 patients with poor blood sugar control, supplementation with bladderwrack and brown seaweed extract for 6 months lowered fasting blood glucose, postprandial blood glucose, and HbA1c [\[R\]](#).

Brown seaweed contains a natural fiber called alginate, which slows down the digestion of food and prevents spikes in blood sugar. Bladderwrack also contains iodine, which assists the thyroid in regulating hormones, including those involved in glucose metabolism.

100



Ursolic Acid

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 150-300 mg of ursolic acid supplement daily, preferably with food to enhance absorption. It can be continued for several weeks to months, but always consult with a healthcare provider before starting any new supplement regimen.

TYPICAL STARTING DOSE

150 mg

Description

Ursolic acid is a naturally occurring compound found in various fruits and herbs, including apple peels and holy basil. It is used for its potential to support muscle growth, reduce inflammation, and promote overall health through its antioxidant and anti-inflammatory properties.

How it helps

In a placebo-controlled trial of 24 patients with metabolic syndrome, supplementation with ursolic acid (150 mg/day) for 12 weeks lowered fasting glucose (by 1.3 mmol/L) [\[R\]](#).

Ursolic acid is believed to increase insulin sensitivity, potentially lowering fasting glucose.

101



Celery Leaf Extract

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 75-150mg/day celery leaf extract standardized to a minimum 42.5% total phthalides.

TYPICAL STARTING DOSE
500 mg

Description

Celery leaf extract is a concentrated substance derived from the leaves of the celery plant (*Apium graveolens*). It is often used for its potential health benefits, which may include anti-inflammatory and antioxidant properties. Celery leaf extract is typically consumed in the form of dietary supplements or used as an ingredient in health and wellness products. It is believed to offer various benefits, such as supporting cardiovascular health, reducing blood pressure, and aiding in digestion, although more research is needed to fully establish these effects.

How it helps

Celery is noted for its low sugar content and high fiber, which can slow the absorption of sugar into your bloodstream and prevent spikes in blood glucose. Its anti-inflammatory properties also aid in improving heart health, which can be compromised in individuals with high blood sugar.

A randomized clinical trial in 16 elderly pre-diabetics found that celery leaf extract capsules (250 mg, 3x/day (morning, afternoon, and evening), 30 minutes before a meal, for 12 days) **decreased pre-prandial plasma glucose levels and post-prandial plasma glucose** levels but did not increase plasma insulin levels [R].

102



Brown Seaweed

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a supplement containing brown seaweed extract, such as Fucus vesiculosus or Ascophyllum nodosum, in capsule or powder form. Aim for a daily dosage of 500-1000 mg, preferably with meals to enhance absorption. Continue this regimen for at least 8-12 weeks to evaluate its effects on your health.

TYPICAL STARTING DOSE
500 mg

Description

Brown seaweed, such as kelp and wakame, is a nutrient-dense marine alga often used in Asian cuisine and dietary supplements. It's a natural source of essential minerals like iodine and may offer various health benefits, including thyroid support and potential antioxidant effects.

How it helps

Brown seaweed supplement contains a compound called fucoxanthin, which may help reduce high blood sugar levels by improving insulin resistance. Additionally, it can also delay absorption of sugars in your bloodstream, preventing sudden spikes in blood sugar levels.

In a [placebo-controlled trial of 80 prediabetic participants](#), supplementation with brown seaweed (Ecklonia cava) extract (1500 mg/day) for 12 weeks **decreased postprandial glucose** [\[R\]](#).

However, supplementation with 500-2000 mg phlorotannin-rich brown seaweed (Fucus vesiculosus) extract 30 min prior to 50 g of available carbohydrate from white bread had **no effect on postprandial glucose** in a [placebo-controlled trial of 38 healthy volunteers](#) [\[R\]](#).

In a placebo-controlled trial of 65 patients with poor blood sugar control, supplementation with bladderwrack and brown seaweed extract for 6 months lowered fasting blood glucose, postprandial blood glucose, and HbA1c [\[R\]](#).

103



Inositol

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take inositol as a daily supplement, usually available in powder or capsule form. The typical dosage ranges from 2 grams to 18 grams per day, divided into smaller doses taken with meals and water to aid absorption. It's important to start with a lower dose and gradually increase to avoid digestive side effects.

TYPICAL STARTING DOSE

2 g

Description

Inositol is a naturally occurring compound that plays a role in cell signaling and neurotransmitter function. It has been studied for its potential in promoting mental health and managing conditions like anxiety and depression when used as a supplement under the guidance of a healthcare professional.

Inositol is a type of sugar that our bodies need to function. It was considered a vitamin (vitamin B8) until it was discovered that our bodies can make it from another common sugar, glucose [\[R\]](#).

[Myo-inositol](#) is the most common form of inositol. It plays a role in [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart health
- Normal blood sugar levels
- Mental health
- Cognitive function
- Reproductive health

Myo-inositol can convert to [D-chiro-inositol](#) in the body. These two forms of inositol are often combined in supplements. People use them to improve blood sugar control and PCOS [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

In a 12-month study with 80 postmenopausal women and metabolic syndrome, myo-inositol (2 g b.i.d) showed significant improvements in glucose, insulin, HOMA-IR, triglycerides, HDL cholesterol, and blood pressure compared to placebo, while BMI and waist circumference remained unchanged [\[R\]](#).

104



Red Clover

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a red clover supplement in the form of capsules, typically ranging from 40 to 80 milligrams daily. This should be done under the guidance of a healthcare provider, especially if you're using it for menopausal symptoms or bone health, to ensure it's appropriate for your individual needs. Generally, it's used for periods ranging from 3 to 12 months.

TYPICAL STARTING DOSE

40 mg

Description

Red Clover is a plant that's often utilized for its health benefits. Not just pleasing to the eyes with its bright color, it's known to help with skin health and menopause symptoms. Additionally, it may improve heart health and bone density. It's like a power-plant, offering multiple health benefits in one package.

How it helps

In a placebo-controlled trial of 36 participants, supplementation with red clover extract (1.9 g/day for 8 weeks) lowered fasting insulin (by 0.75 μ IU/mL), blood glucose (especially in those older than 50 years old), and HbA1c (from 5.36 to 5.28% in those older than 50 years old) [R].

In a placebo-controlled trial of 43 postmenopausal women, supplementation with red clover (40-80 mg/day) for 3 months decreased insulin sensitivity without affecting SHBG levels [R].

However, red clover isoflavones (86 mg/day for 3 cycles) did not affect insulin resistance in a placebo-controlled trial of 25 premenopausal women [R].

105



Banaba

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 32-48 mg of a standardized banaba extract containing 1% corosolic acid, once daily with water. It is best taken with a meal for optimal absorption and effectiveness. Continue this supplementation for at least 2 weeks to potentially begin observing benefits such as improved blood sugar levels.

TYPICAL STARTING DOSE

32 mg

Description

Banaba, a plant traditionally used in herbal medicine, is believed to have potential benefits for blood sugar management and weight control. It is used in various dietary supplements and herbal remedies.

How it helps

In a placebo-controlled trial of 24 patients with metabolic syndrome, supplementation with banaba (500 mg, 2x/day) for 12 weeks lowered systolic blood pressure (by 5.2 mmHg), fasting glucose (by 0.2 mmol/L), VLDL-C (by 0.2 mmol/L), AUC insulin, and insulinogenic index [R].

Banaba supplements contain corosolic acid, which effectively lowers blood sugar levels by stimulating glucose uptake into cells.

106



Lactobacillus Acidophilus NCFM

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

TYPICAL STARTING DOSE

10 billion CFU

Description

[Lactobacillus acidophilus](#) is a [probiotic](#) bacterium that has been traditionally and widely used in the dairy industry to make yogurt [\[R\]](#).

More recently, *L. acidophilus* has been used as a probiotic. People take it to help with [\[R, R, R, R\]](#):

- High cholesterol
- Gut diseases
- Allergies
- Vaginal infections

L. acidophilus NCFM is a specific strain that may help relieve diarrhea, improve gut health, and boost the immune system. It can be taken as a supplement or found in some yogurts and other fermented foods.

How it helps

The combination of a diet richer in fruits and vegetables and supplementation with a synbiotic containing *L. acidophilus* NCFM and *Bifidobacterium lactis* HN019 decreased weight, fasting glucose, insulin resistance, insulin, and triglycerides better than either of these interventions alone in a non-placebo-controlled trial of 55 overweight or obese participants [\[R\]](#).

107



Brewer's Yeast

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1 to 2 tablespoons of brewer's yeast daily, mixing it into water, juice, smoothies, or food. It can be consumed at any time of day, but incorporating it into a regular, daily routine ensures consistent intake. Continuation can be long-term if it agrees with your system and you're seeing desired outcomes.

Description

Brewer's yeast is a nutritional supplement rich in B vitamins, minerals, and protein. It's often used to support energy levels, boost metabolism, and promote overall health, particularly for individuals with dietary restrictions or specific nutritional needs.

Brewer's yeast is a great source of B-vitamins and minerals like chromium, iron, zinc, and selenium. A 1 tablespoon serving provides 3.3 mcg of chromium or 9%DV.

How it helps

Brewer's Yeast is rich in chromium, which can improve your body's insulin sensitivity, allowing it to control your blood sugar levels more effectively. By supplementing with Brewer's Yeast, your fasting glucose levels can potentially be lowered, helping manage your condition.

In a study with 78 type 2 diabetes patients, Brewer's yeast (23.3ug Cr/day) and CrCl3 (200ug Cr/day) supplements, given sequentially with a placebo in between, led to decreased glucose levels (fasting and post-glucose load), fructosamine, and triglycerides, while increasing HDL-cholesterol, serum, and urinary chromium [\[R\]](#).

This study aimed to investigate the impact of brewer's yeast on plasma glucose and lipid profiles in 55 patients with type 2 diabetes and hypercholesterolemia. Patients took 12 tablets of 300 mg yeast daily for 8 weeks, resulting in decreased triglycerides and LDL-C levels at Weeks 4 and 8, while HDL-C levels increased significantly at both time points compared to baseline [\[R\]](#).

108



Bergamot

IMPACT1 / 5

EVIDENCE1 / 5

How to implement

Take 500-1000mg of bergamot extract supplements once daily, preferably in the morning with a meal for better absorption.

Description

Bergamot is a citrus fruit known for its aromatic peel, which is used to make essential oils and flavorings. It is sometimes used in aromatherapy and may have potential mood-enhancing effects when diffused or applied topically.

Bergamot (*Citrus bergamia*) is a bitter citrus fruit native to southern Italy. The fruit is inedible due to its sour taste. The peel is used to make essential oil, and the juice is used to make extracts. People use bergamot in food, supplements, and cosmetics [\[R\]](#).

How it helps

Bergamot contains flavonoids that may help lower high blood sugar levels by improving how your body metabolizes glucose and insulin. Additionally, its antioxidant properties could potentially reduce oxidative stress linked to high blood sugar.

In a placebo-controlled trial of 45 patients with metabolic syndrome, supplementation with bergamot polyphenol extract (650-1300 mg/day) for 90 days lowered fasting glucose (by 18.1%). A new phytosomal formulation of bergamot polyphenol extract was as effective as the traditional form at lowering fasting glucose but its absorption was 2.5-fold higher in a placebo-controlled trial of 60 patients with type 2 diabetes [\[R\]](#), [\[R\]](#).

In a placebo-controlled trial of 60 patients with type 2 diabetes, a new phytosomal formulation of bergamot polyphenol extract was as effective as the traditional form at lowering fasting glucose but its absorption was 2.5-fold higher [\[R\]](#).

109



Walking Meditation

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Dedicate 10-20 minutes daily to practice walking meditation, ideally in a quiet space where you can walk back and forth. Focus on the sensation of each step, maintaining a slow pace that allows you to be fully aware of the movement and feeling in your feet and body. It can be done indoors or outdoors.

TYPICAL STARTING DOSE

30 minutes

Description

Walking meditation is a mindfulness practice that combines the physical activity of walking with focused awareness and deep breathing. It is used to reduce stress, enhance mental clarity, and cultivate mindfulness.

How it helps

In a non-placebo-controlled trial of 23 patients with type 2 diabetes, practicing Buddhist walking meditation (30 min, 3x/week for 12 weeks) decreased fasting glucose [\[R\]](#).

Walking meditation may help by stimulating your muscles to absorb more glucose from the bloodstream. It also aids in relaxation, which can help prevent or minimize stress-induced glucose spikes.

110



Saffron

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 20 mg of saffron supplement daily. This can be taken at any time of the day, with or without food.

TYPICAL STARTING DOSE

20 mg

Description

Saffron is a spice derived from the stigma of the saffron crocus flower, and is native to the Mediterranean and Asia. Its main compounds include crocin, picrocrocin, and safranal, which may contribute to its antioxidant properties and potential mood-enhancing effects.

[Saffron](#) is a yellow spice praised for its color, taste, and potential health benefits [\[R\]](#).

Saffron is rich in antioxidants such as *crocin*. Researchers are looking into its potential benefits for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Gut conditions
- Heart health
- Mental health

How it helps

In a meta-analysis of 19 trials, saffron supplementation reduced FBG (-9.06 mg/dl) and HbA1c (-0.19%) [\[R\]](#).

25 RCTs met the inclusion criteria. The mean difference in fasting blood sugar showed a significant reduction in patients with metabolic syndrome (-0.30) but a nonsignificant change in the HbA1C level [\[R\]](#).

Nine articles with 12 arms containing 595 participants were included in this study. Our study found WC was significantly reduced and FPG (-6.54 mg/dl) following saffron intervention. Subgroup analysis highlighted that FPG levels (-10.24 mg/dl) [\[R\]](#).

However, some studies didn’t find improvements in fasting glucose with saffron supplementation [\[R\]](#), [\[R\]](#).

111



Colostrum

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take colostrum supplements orally, typically 20 to 60 grams daily, split into two to three doses. It is recommended to start with a lower dose and gradually increase as needed. This supplement can be taken for varying durations, from a few weeks to several months, depending on the health goals and responses observed.

TYPICAL STARTING DOSE

20 g

Description

Colostrum is the first milk produced by mammals, including humans, after giving birth. It is rich in nutrients and antibodies and is believed to support newborns' immune systems and overall health.

Colostrum, or “first milk,” is the very first type of milk produced right after a mammal gives birth. It supports the newborn’s immune system and provides a rich source of nutrients and growth factors [R].

People take colostrum to boost immunity and exercise performance [R].

How it helps

Colostrum supplements may help improve fasting glucose levels as they contain certain growth factors that aid in glucose metabolism, thereby regulating blood sugar levels. However, it's important to combine this with a balanced diet and regular exercise.

This study investigated the effects of bovine colostrum (BC) on Type 2 diabetes patients. BC supplementation for 4 weeks reduced blood glucose, cholesterol, and triglyceride levels, potentially benefiting diabetic patients by improving these parameters [R].

112



Jackfruit

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate ripe jackfruit into your diet by adding it to smoothies, salads, or eating it raw as a snack. Aim to consume it 2-3 times a week. For those who prefer, young (unripe) jackfruit can be cooked and used as a meat substitute in dishes like tacos or curry, 1-2 times a week.

Description

Jackfruit is a tropical fruit rich in vitamins, minerals, and dietary fiber. It can be a nutritious addition to a balanced diet, supporting digestion, immunity, and overall health.

How it helps

Jackfruit is high in fiber and has a low glycemic index, which can slow the rate at which your body absorbs sugars.

In a placebo-controlled trial of 40 patients with type 2 diabetes, consuming green jackfruit flower (30 g/day) for 12 weeks decreased fasting glucose, postprandial glucose, and mean blood glucose [R].

113



Amaranth

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate amaranth into your diet by adding it to your daily meals. You can use amaranth grains as a substitute for rice in dishes, add them to your morning porridge, or use amaranth flour in your baking recipes. Aim to include amaranth 2-3 times per week to reap its benefits.

Description

Amaranth is a nutritious, gluten-free grain-like seed that has been a staple in the diets of various cultures for centuries. It is rich in protein, fiber, vitamins, and minerals like calcium and iron. Amaranth is used to promote heart health, support digestion, and provide sustained energy.

How it helps

In a non-placebo-controlled trial of 81 obese participants, consuming amaranth seed oil (20 mL/day) as part of a 3-week weight-loss program improved insulin resistance, fasting insulin, and fasting glucose [R].

Amaranth is high in fiber and protein, which can slow the absorption of sugar into your blood and prevent spikes in blood glucose.

114



Mangosteen and Sphaeranthus Indicus

IMPACT

0 / 5

EVIDENCE

1 / 5

How to implement

Take a supplement containing a blend of mangosteen and sphaeranthus indicus, usually available in capsule form. Follow the manufacturer's instructions, typically involving taking one capsule twice daily, 30 minutes before meals with water.

Description

A combination of mangosteen and sphaeranthus indicus is sometimes used in dietary supplements for its potential to support weight management and metabolic health. These natural ingredients may help regulate appetite and metabolism.

How it helps

Mangosteen and Sphaeranthus Indicus may help regulate blood sugar levels, potentially being beneficial for fasting glucose conditions. However, more specific research is needed to establish this connection more definitively.

In 2 placebo-controlled trials of 160 obese participants, supplementation with a combination of mangosteen and *Sphaeranthus indicus* (400 mg, 2x/day) for 8-16 weeks **reduced fasting glucose by 12.2%** [\[R, R\]](#).

115



Biotin

IMPACT

0 / 5

EVIDENCE

1 / 5

How to implement

For adults, take a biotin supplement of 30 to 100 micrograms daily. This can be consumed in a single dose with a meal to improve absorption. It is recommended to continue daily for optimal benefits on hair, skin, and nail health.

TYPICAL STARTING DOSE

30 mcg

Description

Biotin, also known as vitamin B7, is an essential nutrient that plays a key role in metabolizing carbohydrates, fats, and proteins. It is important for maintaining healthy hair, skin, and nails and supporting overall metabolic function.

A **biotin supplement** of up to 30 micrograms per day can be taken to meet needs not achieved through diet.

How it helps

Biotin has a crucial role in regulating genes linked to blood glucose control in our bodies.

The combination of biotin (2 mg/day) and chromium picolinate (600 mcg/day) taken for 28-90 days lowered fasting glucose (by 9.8 mg/dL), 2-hour glucose after a glucose tolerance test (by 9.7%), and HbA1c in 4 placebo-controlled trials of 874 patients with type 2 diabetes [\[R, R, R, R\]](#).

116



Cinnamon

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a 1 g cinnamon supplement once daily, ideally with a meal to aid absorption. This can be in the form of a capsule or tablet. Continue this regimen as long as it aligns with your health goals and under the guidance of a healthcare provider.

TYPICAL STARTING DOSE

1 g

Description

Cinnamon is a popular spice that may have various health benefits, including improving blood sugar control, reducing inflammation, and providing antioxidants. It's commonly used in both culinary and herbal applications.

[Cinnamon](#) is a spice made from the bark of *Cinnamomum* trees. Cinnamon can [\[R\]](#):

- Decrease inflammation
- Fight [oxidative stress](#)
- Kill microbes

Cinnamon is mainly used in cooking and fragrances. **As a natural remedy, people use cinnamon to reduce blood sugar** [\[R\]](#).

There are two main types of cinnamon [\[R\]](#):

- Ceylon or ‘true’ cinnamon (*Cinnamomum verum*)
- Chinese or Cassia cinnamon (*Cinnamomum cassia*)

How it helps

Cinnamon has been reported to help lower blood sugar levels and improve insulin sensitivity.

117



Chromium

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a 200 mcg chromium supplement daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

200 mcg

Description

Chromium is a trace mineral that plays a role in insulin sensitivity and glucose metabolism. Adequate chromium intake through diet or supplements may help support blood sugar control and overall metabolic health.

[Chromium](#) (Cr) is a trace element. It helps regulate carb, fat, and protein breakdown [\[R\]](#).

Women need 20-25 micrograms (mcg) of chromium per day, while men need 30-35 mcg [\[R\]](#).

It’s easy to get chromium from your diet. Good sources include [\[R\]](#):

- Grape and orange juice
- Ham
- Beef
- Lettuce

You can also get chromium from supplements [\[R\]](#).

How it helps

Chromium supplementation can help improve insulin sensitivity and glucose metabolism in some individuals.

118



Broccoli

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate at least one cup of chopped broccoli, either steamed or raw, into your daily diet. This can be as part of a meal or snack. Continue this practice daily for ongoing health benefits.

Description

Broccoli and broccoli sprouts are nutrient-dense vegetables packed with vitamins, minerals, and antioxidants. They are known for their potential to support a healthy immune system, protect against chronic diseases, and promote overall nutritional wellness.

Broccoli is high in vitamin K and C, as well as a number of other vitamins and minerals, and antioxidants like quercetin. A ½ cup serving provides 110 mcg of vitamin K or 92%DV.

How it helps

Broccoli contains fiber and is high in chromium, a mineral that may enhance hormone insulin function.

119



Bladderwrack

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 300-500 mg of bladderwrack supplement daily, preferably with meals to enhance absorption. It's recommended to start with the lower dose and gradually increase if needed. Consult with a healthcare provider before beginning, especially if you are pregnant, nursing, or have a medical condition like hyperthyroidism.

TYPICAL STARTING DOSE

300 mg

Description

Bladderwrack is a type of seaweed that has been used for its potential health benefits, including iodine content that supports thyroid function.

How it helps

In a placebo-controlled trial of 65 patients with poor blood sugar control, supplementation with bladderwrack and brown seaweed extract for 6 months lowered fasting blood glucose, postprandial blood glucose, and HbA1c [\[R\]](#).

Bladderwrack is rich in iodine, which can help stimulate thyroid function. This may improve metabolism and glucose control during fasting.

120



Quinoa

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate quinoa into your diet by replacing rice or pasta with it in meals. Aim for 1-2 servings, which is about 1/2 to 1 cup cooked, 2-3 times a week to benefit from its high protein, fiber, and mineral content.

Description

Quinoa is a nutrient-rich, gluten-free grain-like seed originating from South America. It is packed with protein, fiber, B-vitamins, vitamins A, C, and E, as well as minerals like calcium phosphorus, iron, and zinc, making it a valuable addition to diets for promoting muscle health, aiding digestion, and providing essential nutrients.

[Quinoa](#) (*Chenopodium quinoa Willd*) is a flowering plant native to The Andes in South America. There, it is a **food staple for indigenous cultures** [\[R\]](#), [\[R\]](#), [\[R\]](#).

Quinoa is famous for its seeds, which are **gluten-free and high in protein**. In comparison with many grains, quinoa seeds have a greater amount of many nutrients, including [\[R\]](#), [\[R\]](#):

- Fiber
- [Fatty acids](#) (e.g., linoleic and α-linolenic acid)
- Vitamins (e.g., B1, B2, B6, C, and E)
- Minerals (e.g., calcium, phosphorus, iron, and zinc)

Quinoa seeds can be used whole or ground to a fine powder and shaped into flakes before use [\[R\]](#).

How it helps

Quinoa has a low glycemic index and is rich in protein and fiber, helping in blood sugar control.

121



Dietary Zinc

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate foods high in zinc, such as beef, poultry, seafood (especially oysters), beans, nuts, and whole grains, into your daily diet. Aim for the recommended dietary allowance of zinc, which is 11 mg per day for adult men and 8 mg per day for adult women.

Description

Dietary zinc is essential for the body. It helps our immune system fight off bacteria and viruses, plays a role in healing wounds, and is essential for our sense of taste and smell. Without enough zinc, these systems may not work as effectively as they should.

How it helps

Higher intake of dietary zinc can help lower fasting glucose levels by influencing the production of insulin, a hormone that regulates blood glucose. It's especially beneficial for those with diabetes as it enhances insulin action and aids in carbohydrate metabolism.

Genetically higher zinc levels may be associated with lower fasting glucose [\[R\]](#).

122



Berries

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate a variety of berries such as strawberries, blueberries, raspberries, and blackberries into your daily diet. Aim for at least one cup of fresh or frozen berries every day, either as a snack, part of your breakfast (such as in oatmeal or yogurt), or as a dessert.

Description

Berries, such as strawberries, blueberries, and raspberries, are packed with antioxidants, vitamins, and fiber. Regular consumption of berries may support heart health, improve cognitive function, and contribute to overall well-being.

How it helps

Berries are low in sugar, high in fiber, and have antioxidants that may contribute to better glucose tolerance.

123



Salmon

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate at least two servings of salmon into your weekly diet, aiming for each serving to be about 3.5 ounces (100 grams), cooked. Choose wild-caught salmon when possible for higher omega-3 content.

Description

Salmon is a nutrient-rich fish known for its high content of omega-3 fatty acids, which can support heart health and reduce inflammation. It's also an excellent source of protein, vitamin D, and various minerals.

How it helps

Salmon, being rich in omega-3 fatty acids, can improve insulin sensitivity and help lower fasting glucose. Additionally, its high protein content can help keep blood sugar steady.

124



Calcium Supplements

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 500-600 mg of calcium supplement twice daily with food. For best absorption, do not exceed 600 mg at one time and ensure a total daily intake of 1000-1200 mg from all sources, including diet. Continue indefinitely for ongoing support of bone health.

TYPICAL STARTING DOSE

1000 mg

Description

Calcium supplements are commonly used to support bone health and prevent conditions like osteoporosis. Adequate calcium intake is essential for maintaining strong bones and teeth.

[Calcium](#) is the most abundant mineral in the human body. It is vital for the bones, heart, muscles, and nervous system [\[R\]](#).

Your body gets calcium from food and needs vitamin D to help absorb it. Calcium can be found in a variety of foods, including [\[R\]](#):

- Dairy products
- Green, leafy vegetables
- Fish with edible soft bones (e.g., sardines)
- Calcium-fortified foods and beverages

How it helps

Calcium supplements can help regulate blood glucose levels as calcium plays a crucial role in insulin secretion and function. It's vital for healthy glucose metabolism, potentially lowering fasting glucose levels.

In a randomized controlled trial at a teaching hospital, 70 women with gestational diabetes (GDM) at 24-28 weeks of pregnancy were divided into two groups. Group A (n = 34) received vitamin D 1000 IU and calcium 1000 mg daily, while Group B (n = 36) received vitamin D 250 IU and calcium 500 mg daily for 6 weeks. Group A showed significant reductions in FPG, fasting serum insulin, LDL, total cholesterol levels, and an increase in HDL levels. Group B only showed a significant decrease in FPG after 6 weeks of supplementation [\[R\]](#).

However, genetically predicted higher serum calcium levels may be associated with an increased risk for diabetes [\[R\]](#).

125



Vegetables

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate at least 2-3 cups of various vegetables into your daily diet, ensuring a mix of colors like greens, reds, and yellows to maximize nutrient intake. Aim to include vegetables in most meals, either as a side, part of the main dish, or snacks.

Description

Vegetables are edible parts of plants that offer various health benefits due to their rich nutrient content, including vitamins, minerals, fiber, and antioxidants. They are essential components of a balanced diet and contribute to overall health, supporting various bodily functions.

How it helps

Non-starchy vegetables provide essential nutrients and fiber, assisting in blood glucose control.

126



Agmatine

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take agmatine as a dietary supplement in a dose of 1.6 to 6.4 milligrams per kilogram of body weight, daily. It can be consumed with or without food. For best results, continue taking it on a daily basis for at least two weeks to assess its effect on your body.

TYPICAL STARTING DOSE

1 g

Description

Agmatine is a naturally occurring compound found in the human body and in certain foods. It is sometimes used as a dietary supplement and is believed to have potential benefits for pain relief, mood regulation, and cognitive function.

How it helps

Agmatine has demonstrated hypoglycemic effects through various mechanisms, such as insulin-like actions on end organs, stimulation of insulin release from pancreatic islet β cells, and activation of imidazoline receptors, leading to increased glucose uptake [\[R\]](#), [\[R\]](#).

Agmatine may also inhibit advanced glycation end-product formation, improve nerve regeneration, enhance kidney function, and complement metformin’s effects on type 2 diabetes [\[R\]](#).

Agmatine improved insulin sensitivity in insulin-resistant rats by reducing mTOR and glucose transporter 2 (GLUT2) production in rats [\[R\]](#), [\[R\]](#), [\[R\]](#).

Agmatine reduced blood sugar levels in rats by increasing β -endorphin production by the adrenal glands. β -endorphins cause the uptake of glucose from the blood into skeletal muscle tissue [\[R\]](#), [\[R\]](#), [\[R\]](#).

127



Whole Grains

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate at least three servings of whole grains into your daily diet. This can include consuming foods such as whole grain bread, brown rice, whole grain pasta, and oats. Aim to replace refined grains with whole grains at each meal for optimal benefits.

Description

Whole grains encompass a variety of grains like wheat, oats, and quinoa, where the entire grain kernel is intact. They are rich in fiber, vitamins, minerals, and antioxidants, supporting heart health and reducing the risk of chronic diseases.

Unlike refined grains, whole grains contain nutritious parts of the grain like bran and germ.

Whole grains provide many crucial nutrients, including:

- Fiber
- B-vitamins
- Iron
- Magnesium
- Phosphorus

Due to their high fiber content, whole grains don’t tend to spike blood sugar like refined grains do.

How it helps

Whole grains are a great source of fiber and have a lower glycemic index, helping to regulate blood glucose.

128



Legumes

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate a serving of legumes, such as beans, lentils, chickpeas, or peas, into your diet at least four times a week. A serving size is approximately half a cup cooked. Ensure to prepare them properly by soaking and rinsing beans, if applicable, to reduce anti-nutrients and improve digestibility.

Description

Legumes, such as beans, lentils, and chickpeas, are excellent sources of plant-based protein, fiber, and various vitamins and minerals. Including legumes in your diet can promote satiety and support digestive health.

Legumes are plants from the *Fabaceae* family. Their edible seeds are called **pulses**. Legumes are important food staples and sources of carbohydrates, fiber, protein, iron, and other key nutrients.

Common legumes include:

- Peanuts
- Beans
- Chickpeas
- Peas
- Lentils

How it helps

Legumes such as beans and lentils have a low glycemic index and can help control blood sugar levels.

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DHEA (Dehydroepiandrosterone)

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 25-50 mg of DHEA orally with water daily, preferably in the morning to mimic the body's natural rhythm of DHEA production. It is advisable to start at the lower dose to assess tolerance and adjust as needed. Consult a healthcare provider for personalized advice and before starting a new supplement regimen.

TYPICAL STARTING DOSE

25 mg

Description

DHEA is a hormone produced by the adrenal glands and has been used as a dietary supplement for various purposes, including supporting hormonal balance and energy levels. It may have potential benefits for specific individuals, but its use should be supervised by a healthcare professional due to its hormonal nature.

DHEA is a steroid hormone produced primarily by the adrenal glands. It is also produced to a much lesser extent by the testes and ovaries and, possibly, the brain [R, R].

DHEA helps make the sex hormones [testosterone](#) and [estrogen](#). DHEA is important for [R, R, R, R]:

- Mood
- Immunity
- Muscle strength
- Bone health
- Skin health

DHEA is released in response to stress. In fact, one of DHEA's important roles is to protect against the adverse effects of prolonged and excessive exposure to cortisol, the stress hormone [R, R, R].

How it helps

DHEA works by improving insulin sensitivity and glucose metabolism, which helps to regulate your blood sugar levels. Therefore, it can be beneficial for managing fasting glucose levels in your body.

Please note: *DHEA has been banned by sport associations and anti-doping agencies. DHEA should not be used at high doses or long-term and is contraindicated in patients with hormone-responsive cancers. DHEA supplements should only be used with the prescription of a medical professional. Discuss risks and side effects with your doctor* [R].

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Exercise At Least One Hour a Day

IMPACT

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EVIDENCE

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How to implement

Dedicate a minimum of 60 minutes to moderate-intensity activities such as brisk walking, swimming, or cycling. Do this most days of the week, aiming for at least 5 days to optimize benefits.

TYPICAL STARTING DOSE

1 hour

Description

[Exercise](#) can do wonders for your health. It can help you lose weight, improve your heart health, boost your mood, and more [\[R\]](#).

There are many ways you can be active. You can walk, run, swim, dance, or play team sports. **Everything counts, and it's never too late to start!**

Try to get at least **60 minutes of moderate physical activity on most days**, including walking. **Getting a mix of cardio (min 150 min/day) and strength training (min 2 times a week) may be optimal.**

How it helps

Regular physical activity can enhance the body's sensitivity to insulin and help manage blood sugar levels. It encourages the muscles to use glucose for energy, leading to improved glycemic control.

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Barley

IMPACT

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EVIDENCE

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How to implement

Include barley in your diet by adding it to soups, stews, or salads. You can also replace rice or other grains with cooked barley. Aim to consume barley-based meals 2-3 times a week for ongoing dietary benefits.

Description

Barley is a whole grain rich in fiber, vitamins, and minerals. Incorporating barley into your diet can support digestive health, provide sustained energy, and contribute to overall nutritional wellness.

How it helps

Barley is a whole grain high in soluble fiber, which can help control blood glucose levels.

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Oat Bran

IMPACT

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EVIDENCE

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How to implement

Incorporate oat bran into your diet by adding 1-2 tablespoons to your breakfast cereal or yogurt daily. You can also use it as an ingredient in homemade bread, muffins, or pancakes. Aim to include oat bran in at least one meal per day for ongoing dietary benefits.

Description

Oat bran is the outer layer of oat grains and is rich in soluble fiber, making it a heart-healthy addition to diets. Consuming oat bran may help lower cholesterol levels and support digestive regularity.

How it helps

Oat bran is a high-fiber food that can help in managing blood sugar levels by slowing digestion and absorption of carbohydrates.

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Brown rice

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Replace white rice with brown rice in your meals. Aim to consume brown rice 3-4 times a week, incorporating it into dishes such as stir-fries, salads, or as a side to your main protein source. Start with a serving size of about 1/2 to 1 cup of cooked brown rice per meal.

Description

Brown rice is a whole grain rich in fiber, vitamins, and minerals. It provides sustained energy, supports digestive health, and contributes to overall nutritional well-being.

Brown rice contains a host of B-vitamins including thiamine, and minerals like magnesium, phosphorus, manganese, and selenium. A ½ cup serving provides 0.1 mg of thiamine or 8%DV.

How it helps

Brown rice has a lower glycemic index than white rice, resulting in a slower rise in blood sugar levels post-consumption.

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Geranylgeraniol

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Geranylgeraniol can be taken as a dietary supplement, typically in the form of capsules or softgels. The recommended dosage varies depending on individual health needs and the specific product formulation. It is generally advised to start with a lower dose and gradually increase it, under the guidance of a healthcare professional. Taking it with a meal may enhance absorption and efficacy.

TYPICAL STARTING DOSE

150 mg

Description

Geranylgeraniol is a natural compound found in various plants and herbs, known for its potential health benefits. It plays a crucial role in the body's biosynthesis of essential molecules like CoQ10 and vitamin K2. This compound is noted for its anti-inflammatory, antioxidant, and anti-cancer properties, making it a promising supplement for enhancing overall well-being.

How it helps

Animal studies have demonstrated that GG can improve glucose homeostasis and insulin sensitivity. In obese mice, GG supplementation led to better glucose tolerance and reduced production of pro-inflammatory adipokines. These effects were associated with changes in the gut microbiome, indicating a potential prebiotic role for GG [\[R, R\]](#).

The combination of GG with green tea polyphenols may improve glucose clearance and insulin sensitivity in high-fat diet-induced obese mice [\[R\]](#).

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Sulforaphane

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a sulforaphane supplement, typically available in capsule form, with a dosage ranging from 30 to 60 milligrams per day. It is generally taken once daily, with or without food, according to the product's label instructions or a healthcare provider's advice. Continue this regimen daily for as long as you seek its benefits, but consult a healthcare provider for long-term use guidance.

TYPICAL STARTING DOSE

30 mg

Description

Sulforaphane is a natural compound found in cruciferous vegetables like broccoli and cauliflower. It is known for its potent antioxidant and anti-inflammatory properties, potentially offering protective effects against chronic diseases and promoting overall health.

How it helps

Sulforaphane improves the body's glucose control, making it valuable for managing fasting glucose levels. It does this by reducing oxidative stress and inflammation, which can impair the body's ability to properly use insulin and control blood sugar.

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Sleep for 7+ Hours

IMPACT

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EVIDENCE

0 / 5

How to implement

Ensure you allocate enough time in your schedule to achieve a minimum of 7 hours of sleep each night. This might involve going to bed earlier or adjusting your evening routine to promote relaxation and make it easier to fall asleep.

Description

Optimizing sleep involves adopting healthy sleep habits and creating a sleep-conducive environment to ensure restorative and sufficient sleep duration. It supports cognitive function, mood stability, and overall physical health. Most experts recommend getting **at least 7 hours of good-quality sleep each night**.

[Sleep](#) supports your body and mind [\[R, R\]](#). More precisely, sleep helps:

- Support brain health [\[R, R\]](#)
- Maintain a healthy weight and appetite [\[R, R, R\]](#)
- Regulate blood pressure [\[R, R\]](#)
- Balance blood sugar [\[R, R\]](#)

Ways to sleep better include [\[R\]](#):

- Reducing your bright light exposure (screen time) in the evenings
- Sticking to a regular sleep schedule
- Avoiding hunger or large meals before bed
- Avoiding nicotine, caffeine, and alcohol before bed
- Maintaining a sleep area that’s cool, dark, and quiet

How it helps

Quality sleep is crucial for hormonal balance, which assists in controlling blood sugar levels. Improved sleep can help regulate the hormones that affect glucose metabolism.

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Fenugreek

IMPACT

0 / 5

EVIDENCE

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How to implement

Take a 500 mg fenugreek supplement daily, preferably with a meal to aid in digestion and absorption.

TYPICAL STARTING DOSE

500 mg

Description

Fenugreek is an herb and spice commonly used in traditional medicine for its potential to support digestive health, regulate blood sugar levels, and promote lactation in nursing mothers. Its compounds, such as soluble fiber and fenugreek seeds, contribute to its various health benefits.

[Fenugreek](#) is a leafy green legume originating from central Asia. Its leaves and seeds are both used in cooking. Some people also use the seeds to make tea [[R](#), [R](#)].

People use fenugreek tea or supplements for [[R](#), [R](#), [R](#), [R](#)]:

- Reproductive health
- Blood sugar control
- Decreasing cholesterol

How it helps

Fenugreek has been found to help lower blood glucose levels and improve glycemic control due to its high fiber content.

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Regular Sleep Schedule

IMPACT

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EVIDENCE

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How to implement

Go to bed and wake up at the same time every day, even on weekends and holidays. This helps regulate your body's internal clock, leading to better sleep quality. Aim for 7-9 hours of sleep per night.

Description

Maintaining a regular sleep schedule involves going to bed and waking up at consistent times each day. This practice helps regulate the body's internal clock and promotes better sleep quality, mood, and cognitive function.

How it helps

A consistent sleep pattern can help in maintaining a balanced endocrine rhythm, which supports the regulation of insulin and blood glucose levels.

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Almonds

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate a handful of almonds (about 23 kernels) into your daily diet. You can eat them as a snack, add them to your breakfast cereals or yogurt, or include them in salads and other dishes. Do this consistently for ongoing health benefits.

Description

Almonds are a good source of omega-6s, protein and vitamins, making for a great snack food. A 1-ounce serving provides 3700 mg of omega-6.

Almonds are nutritious tree nuts that originate from the *Prunus dulcis* tree. They are packed with essential nutrients, including healthy fats, fiber, vitamin E, and magnesium, which collectively contribute to heart health, support weight management, and may help regulate blood sugar levels.

How it helps

Almonds are high in fiber, protein, and healthy fats, which can improve insulin sensitivity and lower blood sugar levels.

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Avocado

IMPACT

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EVIDENCE

0 / 5

How to implement

Incorporate half to one whole avocado into your daily diet. You can add it to salads, sandwiches, or use it as a healthy fat substitute for spreads or dressings.

Description

Avocado is a nutrient-dense fruit known for its creamy texture and healthy monounsaturated fats. It is packed with vitamins, minerals, and dietary fiber, and may support heart health, skin health, and overall nutrition.

[Avocado](#) is a fruit first cultivated in Mexico in 500 BCE [\[R\]](#), [\[R\]](#).

You can eat it raw in salads, sandwiches, and dips. Avocado oil has recently become popular, but it’s much less nutritious than the whole fruit.

Avocado is rich in antioxidants, vitamins, minerals, and fiber. It may support [\[R\]](#):

- Heart health
- Healthy weight
- Healthy aging

How it helps

Avocados are a good source of healthy fats that can improve insulin sensitivity and help control blood sugar levels.

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Chia Seeds

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate 1 to 2 tablespoons of chia seeds into your daily diet. You can add them to yogurt, smoothies, oatmeal, or salads. Do this regularly as part of your daily meals.

Description

Chia seeds are high in fiber, omega-3 fatty acids, and various vitamins and minerals. Adding chia seeds to your diet can support digestive health, provide essential nutrients, and contribute to overall nutritional wellness.

Chia seeds are a healthy source of omega-3s, calcium, as well as fiber, iron, magnesium phosphorus, and vitamins B1 and B3. A 1-ounce serving provides 5.06 g of ALA.

How it helps

Chia seeds have high fiber content that can slow the absorption of sugar into the bloodstream.

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Avoid Alanine Supplements

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Do not purchase or consume supplements that list alanine, specifically as an ingredient. This includes not using powders, pills, or any form of supplement designed for direct consumption that contains alanine.

Description

L-alanine is a non-essential amino acid that plays a crucial role in the body's energy metabolism, particularly during periods of intense exercise. It can help support endurance and muscle recovery by providing a source of energy and aiding in the removal of harmful metabolic byproducts like lactic acid.

How it helps

Genetically predicted plasma alanine is not linked to coronary artery disease but has been associated with a 35% higher risk of diabetes, elevated glucose, LDL-cholesterol, triglycerides, total cholesterol, apolipoprotein B, and blood pressure, particularly in females for LDL-cholesterol and triglycerides [\[R\]](#).

Mendelian randomization studies demonstrated that a genetic predisposition to type 2 diabetes may be associated with increased levels of alanine, as well as genetically predicted higher alanine levels increasing the risk for diabetes [\[R\]](#), [\[R\]](#).

Alanine can induce gluconeogenesis, a process where your body makes glucose.

Next Steps

Remember, your genes only tell one important part of your health story!

Now that you've seen your DNA-based results for this health topic, let's take a look at other contributing factors.

Your lab results

Your lab results are impacted by the combined effect of your genes, environment and lifestyle.

Lab tests will give you the best picture of your current health status, while your genes provide insight into your health predispositions and which recommendations are best for you.

	HbA1c	30 mmol/mol		29 Dec 2025
	Glucose, Fasting	97 mg/dL		9 Nov 2025
	Insulin, Fasting	9.08 uU/mL		9 Nov 2025