Insulin Resistance

Mitigating Metabolic Risk

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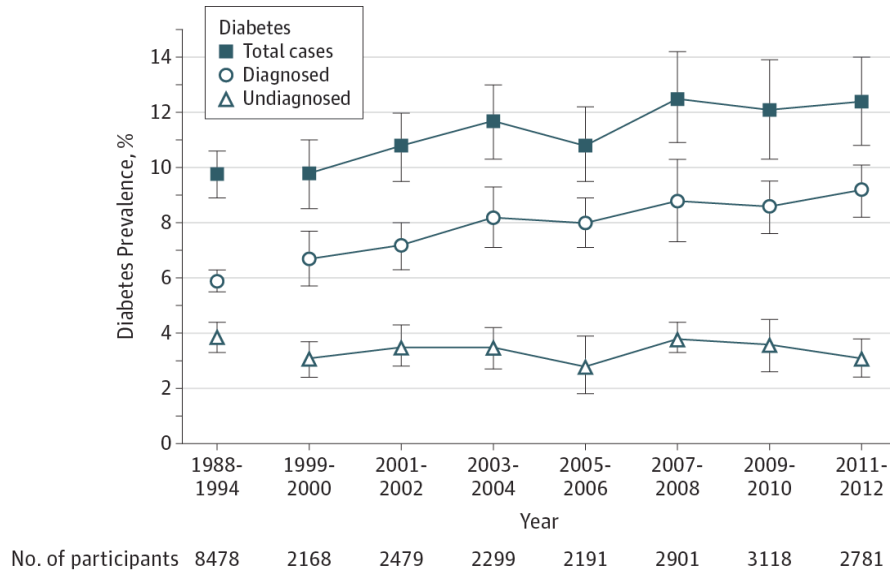
Diabetes & Prediabetes: A growing epidemic



US Trends in Diabetes Prevalence per 100 Adults Aged 20 Years or Older.
Both diagnosed and undiagnosed cases of diabetes are included in the total cases. Diagnosed diabetes is based on self-report of a previous diagnosis by a physician or other health professional. Undiagnosed diabetes is based on a hemoglobin A1c level of 6.5% or greater or fasting plasma glucose level of 126 mg/dL or greater. All estimates were age standardized to the overall 2011-2012 National Health and Nutrition Examination Survey interview population using the age groups of 20-44 years, 45-64 years, and 65 years or older. Error bars indicate 95% confidence intervals.[1]

Diabetes is a cause of morbidity and mortality in the United States which is becoming increasingly common. In the year 1990 3.5% of Americans were diagnosed with diabetes. As of 2015, this number has increased to 30.3 million Americans, or 9.4% of the population, and 1.5 million new Americans are diagnosed with diabetes every year.

The cost of diabetes is estimated to exceed $327 billion. That includes $237 billion in direct medical costs and $90 billion in reduced productivity. Additionally, diabetes dramatically increases the risk of other health problems including heart disease, stroke, high blood pressure, and atherosclerosis.

A 2015 JAMA study found that almost 50% of Americans are living with diabetes or prediabetes, a condition where a person has elevated blood sugar and is at risk of developing diabetes. Untreated, prediabetes often leads to type 2 diabetes within five years. Prediabetes often has no noticeable symptoms, so it is believed that as many as 90% of Americans with prediabetes don't even know it!

Risk Factors Of Prediabetes/Insulin Resistance

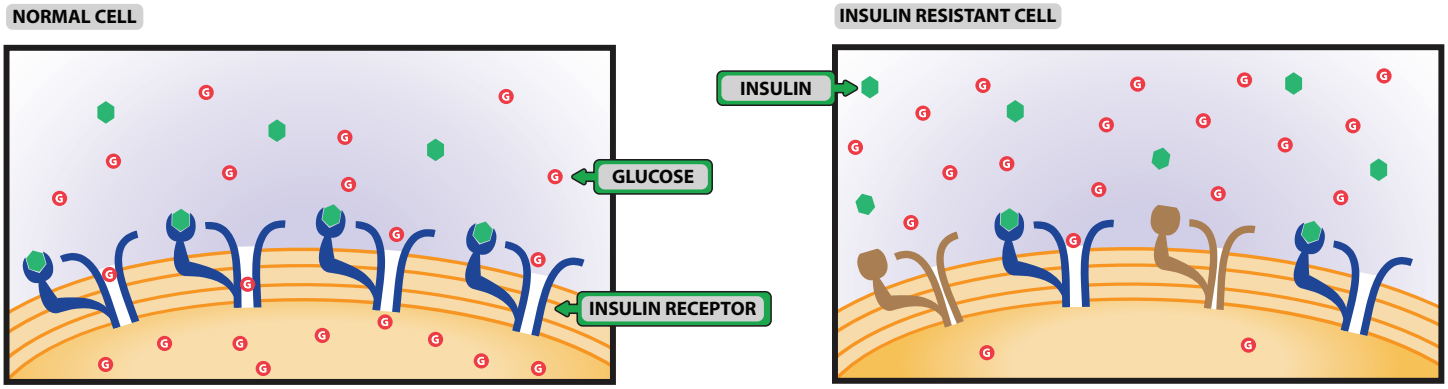
- Overweight or Obese
- Age 45 or Older
- Parent or Sibling With Diabetes
- Physical Inactivity
- High Blood Pressure
- High Cholesterol
- History of Heart Disease or Stroke

What is Prediabetes?

Prediabetes describes a state of insulin resistance, a condition in which cells fail to respond normally to the hormone insulin.

Insulin is one of the most important hormones in weight management. Insulin helps your body move sugar from the blood stream so it can be used as fuel or stored in the form of fat. As carbohydrates are digested, glucose is released in the bloodstream and the pancreas begins to produce insulin. Insulin signals the cells to begin glucose uptake, shuttling glucose molecules from the blood into the cells.

If one is suffering from insulin resistance, the cells are less responsive to insulin's signals and do not uptake enough glucose resulting in elevated blood-glucose levels or hyperglycemia. The body attempts to compensate for this by producing even more insulin, placing additional stress on the pancreas.



Left untreated, prediabetes/insulin resistence can develop into type 2 diabetes. Most physicians will not prescribe prescription drugs until diabetes has fully developed, but patients with prediabetes may prevent the disease from progressing with a combination of lifestyle changes and therapeutic natural substances.

Natural Remedies

Several herbs have been identified to help improve insulin efficiency, enhance glucose uptake by adipose or muscle tissues, and inhibit glucose absorption and production. These include **Gymnema Sylvestre, Momordica Charantia, Chromium, and Vanadyl Sulfate.** Each of these substances has been shown in various studies to decrease fasting glucose and improve glucose tolerance.

Glucose Tolerance, Definition:

The glucose tolerance test is a medical test in which glucose is given and blood samples are taken afterward to determine how quickly it is cleared from the blood.

A patient is said to be under the condition of 'Impaired Glucose Tolerance' when he/she has an intermediately raised glucose level after 2 hours, but less than the level that would qualify for type 2 diabetes.

Glucose Tolerance Factor (GTF) is synthesized in the body from absorbed dietary chromium, and acts as a physiological enhancer of insulin activity, binding to insulin and potentiating its action.

Momordica Charantia

- ***Stimulates Glucose Uptake***
- ***Improves Glucose Tolerance***
- ***Suppresses Gluconeogenesis***
- ***Stimulates Glucose Utilization***

Momordica Charantia, commonly referred to as bitter melon or bitter gourd, is a plant that has been used for the treatment of diabetes and related conditions amongst the indigenous populations of Asia, South America, India, and East Africa. It is a tropical plant that is widely cultivated in Asia, India, East Africa, and South America.

A number clinical studies have demonstrated the hypoglycemic activity of Momordica Charantia in animal and human models. These studies have found that Momordica Charantia contributes to a significant improvement of metabolic syndrome risk factors including a reduction of both fasting and post-prandial serum glucose levels, as well as enhanced glucose tolerance & insulin sensitivity.

Momordica Charantia is believed to exert their hypoglycemic effects via several biological pathways including stimulation of muscle glucose utilization, inhibition of intestinal glucose uptake, suppression of key gluconeogenic enzymes, and activation of AMPK. "Physiological experiments have also shown that M. charantia can stimulate insulin secretion from the endocrine pancreas and elicit glucose uptake in the liver" (Joseph, 2013).

Studies comparing the effects of Momordica Charantia with that of insulin found comparable impacts on glucose uptake, suggesting that Momordica Charantia may have insulin-like properties. One study notably points out "Hypoglycaemic effects in diabetic patients were found to be highly significant ... but were cumulative and gradual" (Srivastava et al, 1993).

Momordica charantia (Bitter Gourd or Bitter Melon)

Gymnema Sylvestre

- ***Increases Insulin Production***
- ***Improves Glucose Utilization***
- ***Abolishes Taste of Sugar***
- ***Suppresses and Neutralizes the Cravings for Sweets***

Gymnema Sylvestre leaves have been used for more than 2,000 years in ayurvedic medicine. Traditional healers have observed that chewing gymnema leaves results in a temporary loss to the perception of sweetness, prompting the nickname 'sugar destroyer'.

The taste alteration effect of Gymenma has been demonstrated in a clinical setting. "Studies have shown that gymnema reduces the perception of sweetness inside the mouth" (Ulbricht, 2011). This has been attributed to the presence of the peptide gurmarin which has been shown to selectively inhibit the neural response to sweet tastants (taste-provoking molecules).

"Preliminary human evidence suggests that gymnema may be efficacious for the management of serum glucose levels" (Ulbricht et al, 2011). Gymnema Sylvestre has reduced hyperglycemia in both human and animal trials. It is believed that gymnema may act by enhancing insulin secretion through increased pancreatic β-cell number and improved cell function as well as enhanced glucose utilization.

Gymnema has been shown to lower serum glucose and glycosylated hemoglobin (HbA1c) levels. "[Gymnema Sylvestre] (400 mg/day) was administered for 18-20 months as a supplement to the conventional oral drugs. During [Gymnema Sylvestre] supplementation, the patients showed a significant reduction in blood glucose, glycosylated haemoglobin(sic) and glycosylated plasma proteins, and conventional drug dosage could be decreased. Five of the 22 diabetic patients were able to discontinue their conventional drug and maintain their blood glucose homeostasis with [Gymnema Sylvestre] alone" (Baskaran, 1990).

Gymnema Sylvestre

Chromium

- ***Contributes to Normal Carbohydrate & Lipid Metabolism***
- ***Fights Carbohydrate Cravings***
- ***Controls Sugar Cravings***
- ***Potentiates Activity of Insulin***
- ***Improves Glucose Tolerance***

Chromium is an essential mineral for human nutrition and aids in the normal function of insulin. Chromium deficiency may contribute to insulin resistance via "significant decreases in cyclic adenosine monophosphate (cAMP)-dependent phosphodiesterase (PDE) activity" (Striffler, 1995).

Research has shown chromium can potentiate insulin action, increasing insulin-stimulated flucose uptake, and may improve glucose tolerance factor (GTF), which further facilitates glucose uptake. Studies have found that daily chromium supplementation can augment glucose disposal rate, suggesting an improvement of insulin sensitivity (Lydic, 2006).

A study of 30 women with gestational diabetes found that 2-8 mcg/kg of chromium daily improved postprandial glucose concentrations and reduced hyperinsulinemia (Jovanovic,1999). A double-blind study of type 2 diabetics found that 200mcg or chromium twice daily led to lower fasting glucose and fasting insulin (Pei, 2006).

Chromium (elemental)

Vanadyl Sulfate

- ***Improves Insulin Sensitivity***
- ***Improves Glucose Uptake & Utilization***

Vanadyl sulfate is a trace mineral that has been extensively studied in the field of diabetes research as a potential means of increasing insulin sensitivity. Vanadyl sulfate itself is thought to exhibit insulin-like effects and is sometimes used by athletes to 'force' more glucose into the muscles.

A study using diabetic rats recorded a significant decrease of blood glucose levels and a significant improvement of insulin sensitivity: "treatment normalized plasma glucose and insulin levels and improved insulin sensitivity (...) and induced beta cells proliferation and/or regeneration" (Missaoui et. al., 2014). That same study also found that after 30 days of treatment, diabetic rats exhibited similar blood glucose to that of non-diabetic animals.

The safety and efficacy of oral vanadyl sulfate in humans was confimed during a 30-month trial, in which diabetic patients saw a decreased blood glucose level and insulin need (Soveid et al, 2013).

Similar results were achieved in human patients with type 2 diabetes who saw significantly decreased fasting glucose and improvement of glucose metabolism in 54% of patients using Vanadyl Sulfate (Goldfine et al, 2000). The authors of that study concluded that vanadyl sulfate's mechanism of action involves a modification of proteins which regulate insulin signaling and glucose utilization.

Vanadyl Sulfate

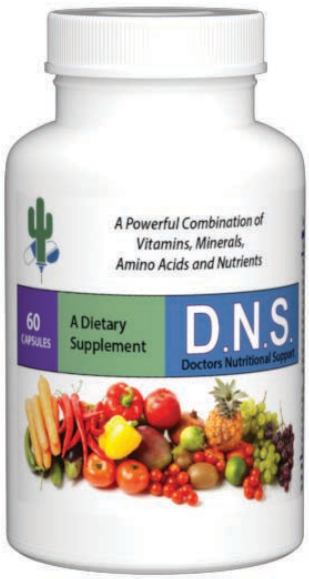
D.N.S.

Doctors Nutritional Support

- ✓ Helps Maintain Healthy Blood Sugar Levels
- ✓ Supports Natural Glucose Uptake
- ✓ Comprehensive Nutritional Support

D.N.S. is a comprehensive formula designed to support glucose utilization and maintain healthy blood sugar levels to help achieve good health.

D.N.S., Doctors Nutritional Support, was formulated using therapeutic levels of key ingredients **Gymnema Sylvestre, Momordica Charantia, Vanadyl Sulfate,** and **Chromium**, proven to effectively promote healthy glucose metabolism while supporting a balanced nutrient intake vital to any diet or weight loss program.



Each 2 Capsules Contain:

Gymnema Sylvestre Extract	300 mg.
Momordica Charantia Extract	200 mg.
Vanadyl Sulfate	15 mg.
Chromium	200 mcg.
Vitamin A (beta carotene)	10,000 IU
Vitamin C	100 mg.
Vitamin D3	400 IU
Vitamin E	30 IU
Thiamin (B1)	1.50 mg.
Riboflavin (B2)	1.70 mg.
Vitamin B6 (pyridoxine)	2 mg.
Folic Acid	200 mcg.
Vitamin B12 (cyanocobalamin)	6 mcg.
Biotin	200 mcg.
Pantothenic Acid	10 mg.
Calcium (calcium carbonate)	150 mg.
Magnesium (magnesium oxide)	100 mg.
Zinc (zinc oxide)	20 mg.
Selenium (sodium selenite)	45 mcg.
Copper (copper gluconate)	2 mg.
Manganese (manganese sulfate)	2.5 mg.
Molybdenum	25 mcg.
Potassium (potassium chloride)	10 mg.
Citrus Bioflavonoids	25 mg.
Inositol	25 mg.
Niacinamide	20 mg.
Choline	10 mg.
L-Carnitine	10 mg.
L-Taurine	10 mg.
Garlic	10 mg.
Grape Seed Extract	10 mg.
Trace Minerals	3 mg.
CoEnzyme Q10	0.01 mg.

Pharmaceutical Grade and Therapeutically Dosed

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*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, mitigate or prevent any disease.