

MITIGATING METABOLIC RISK NATURALLY:

Insulin Resistance Treatment

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LEGERE PHARMACEUTICALS

A Pioneer in Preventive, Holistic and Alternative Medicine for Over 35 Years

Dear Practitioner,

The truth about diabetes is that medicine cannot cure it. Yet, it is the most easily preventable lifestyle illness next to heart disease. One out of every three Americans has this unnecessary condition. According to the American Diabetes Association, one out of three Americans is insulin resistant, even without a diagnosis of diabetes. We have reached the point that studies are showing that the babies of obese mothers begin to develop insulin resistance in the womb. Insulin resistance is an epidemic that shows no signs of slowing down, much like the obesity epidemic.

As a health care practitioner, you will see it present frequently and despite what the drug companies would have you believe, you can treat it without the use of pharmaceuticals. Diet and exercise does not fail.

When a patient has drastically mistreated their body and become diabetic they have to take drastic measures to return to normal. So help them get healthy and look at a diet schedule for diabetics that can dramatically change blood sugar levels, and if combined with the correct supplements can allow the pancreas to regenerate, repair and return to its innate abilities.

Millions of Americans are turning to natural solutions and they trust to you to advise them on the best options. Help your patients make the right dietary choices, along with effective natural products at therapeutic dosages for their individual needs. You asked and our team of well-respected scientists and medical experts listened. Doctor's Nutritional Support (D.N.S.) was designed with your treatment goals in mind.

Your partner in setting higher standards for good health,

*Ron Legere, President
Legere Pharmaceuticals*

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RECOGNIZE METABOLIC RISK

Introduction

Metabolism is a complex chemical process that cells do to sustain life, grow and maintain structure in order to keep the body healthy and working properly. Those at metabolic risk have several factors—high blood pressure, lipid abnormalities, high blood sugar, genetic predisposition, lack of exercise and excess body weight, particularly at the waistline—that cause them to be more likely to develop cardiovascular disease (“CVD”) or type-2 diabetes mellitus (“T2DM”).

Who is at metabolic risk?

Patients at metabolic risk can be identified with simple measurement and blood tests. A person who is at metabolic risk typically has three or more of the following signs:

- Large amount of abdominal fat—generally speaking, this means a waist measurement more than 40 inches in men and more than 35 inches in women
- High triglycerides (levels of fat in the blood)—150 mg/dL or higher, or currently taking medication to lower triglycerides
- Low levels of high-density lipoprotein (HDL or “good”) cholesterol—less than 40 mg/dL in men or less than 50 mg/dL in women, or currently taking medication to increase HDL
- High blood pressure—greater than or equal 130 mm Hg systolic, or greater than or equal 85 mm Hg diastolic, or taking blood pressure medication

- High blood glucose (blood sugar)—fasting glucose of greater than or equal 100 mg/dL, or currently taking medication to lower glucose levels

Focusing on these signs should not take attention away from other known CVD risk factors such as high levels of low density lipoprotein (LDL or “bad”) cholesterol and family history.

CLINICAL GUIDELINES RECOMMEND THE SAME TREATMENT

Lifestyle Therapies

Whether the patient being treated is at metabolic risk due to atherosclerosis or high blood sugar— the underlying causes of cardiovascular disease and type-2 diabetes mellitus respectively, clinical treatment guidelines are the same: lifestyle therapies are preferred. Lifestyle therapies include dietary changes (including supplementation), weight loss and some form of physical exercise. Studies have found lifestyle therapies to be just as effective as medication; in fact, medication is recommended only after lifestyle therapies have failed. This was most recently validated in a report in *The New England Journal of Medicine*, Walter Willett, MD, PhD, and his colleagues from the Harvard School of Public Health demonstrated that 91 percent of all Type 2 diabetes cases could be prevented through improvements in lifestyle and diet.¹ Despite this observation, many practitioners start with medication first before trying lifestyle therapies.

¹ Willet WC, Hu FB, et al. Diet, Lifestyle, and the Risk of Type 2 Diabetes Mellitus in Women. *N Engl J Med*. 2001; 345: 793-797.

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Physical Exercise as a Lifestyle Therapy

Physical activity not only plays a very important role in lowering metabolic risk, but also in reversing insulin resistance and preventing type-2 diabetes mellitus. Research has shown that physical activity can:

- lower your blood glucose and your blood pressure
- lower your bad cholesterol and raise your good cholesterol
- improve your body's ability to use insulin
- lower your risk for heart disease and stroke
- keep your heart and bones strong
- keep your joints flexible
- lower your risk of falling
- help you lose weight
- reduce your body fat
- give you more energy
- reduce your stress levels

Diet as a Lifestyle Therapy

Human genes were highly adapted to a nutrient-dense, low-sugar, high-fiber diet rich in omega-3 fats. However, the modern diet of most Americans is full of empty calories from both highly processed foods, and an abundance of quickly absorbed sugars and carbohydrates (bread, pasta, rice, potatoes, etc.). Eating this out of balance with our genes causes the body to slowly become resistant to the effects of insulin secreted from the pancreas and it needs more to do the same job of keeping your blood sugar even. High insulin levels are the first sign of a problem. The high insulin levels leads to an appetite that is out of control, and increasing weight gain around the belly.

Adopting a more balanced diet that is less dependent on empty calories would correct the problem. Protein blocks insulin production and stimulates glucagon production.

Glucagon is the other hormone secreted by the pancreas. It is responsible for breaking down fats for use as energy by the body. Therefore, a protein diet would seem to be logical. This doesn't mean promoting an Atkins-type diet in which meat is eaten in excess. This does mean eating legumes, nuts, poultry and fish. Fiber is also important and should be predominantly from vegetables and fruits. Fiber and alkalinity are some of the greatest benefits of vegetables over carbohydrate loaded whole grains. Diabetics sometimes have a concern with eating fruit because of the "sugar" but they seem to have no problem eating candy bars, other processed foods and drinking soda. Instead, recommend fruit as a great way to gain essential nutrition and promote an alkaline environment for cellular metabolism.

Weight Loss as a Lifestyle Therapy

If your patients are overweight, then they are also insulin resistance and dropping a few pounds will lower their blood sugar, improve their health and help them feel better. Studies have proven that losing 5% to 10% of their weight will significantly lower their blood sugar. Even simply losing 10 or 15 pounds has health benefits according to the American Diabetes Association. It can:

- Lower blood sugar
- Reduce blood pressure
- Improve cholesterol levels
- Lighten the stress on hips, knees,

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ankles, and feet

Plus, the patients will probably have more energy, mobility and breathe easier.

Obesity and Insulin Resistance Are Linked

The term “insulin resistance” usually connotes resistance to the effects of insulin on glucose uptake, metabolism, or storage. Insulin resistance in obesity and type 2 diabetes is manifested by decreased insulin-stimulated glucose transport and metabolism in adipocytes and skeletal muscle and by impaired suppression of hepatic glucose output.

Some people are actually born insulin resistant. Lack of physical activity causes the cells to be less responsive to insulin. Most experts agree that obesity leads to more insulin resistance. However, it almost certainly also works the other way around: Insulin resistance promotes weight gain. So a vicious cycle can be set up with insulin resistance promoting weight gain, which promotes more insulin resistance.

The association of obesity with type 2 diabetes has been recognized for decades, and the major basis for this link is the ability of obesity to engender insulin resistance. Obesity increases the risk of cardiovascular disease in adults and has been strongly associated with insulin resistance in normoglycemic persons and in individuals with type 2 diabetes.^{2,3}

² Bonadonna RC, Groop L, Kraemer N, et al. Obesity and insulin resistance in humans: a dose-response study. *Metabolism*. 1990; 39: 452–459.

Data from the Framingham study have established an increased incidence of cardiovascular events with increasing weight in both men and women.⁴ Body weight and mortality were directly related in the Harvard Alumni Health Study,⁵ and weight gain was a significant risk factor for development of diabetes mellitus in women.⁶ The association of obesity with the insulin resistance syndrome and cardiovascular risk is not only related to the degree of obesity but also seems to be critically dependent on body fat distribution. Insulin is a critical regulator of virtually all aspects of adipocyte biology, and adipocytes are one of the most highly insulin-responsive cell types. Thus, individuals with greater degrees of central adiposity develop this syndrome more frequently than do those with a peripheral body fat distribution.⁷

³ Rexrode KM, Manson JE, Hennekens CH. Obesity and cardiovascular disease. *Curr Opin Cardiol*. 1996; 11: 490–495.

⁴ Hubert HB, Feinleib M, McNamara PM, et al. Obesity as an independent risk factor for cardiovascular disease: a 26-year follow-up of participants in the Framingham Heart Study. *Circulation*. 1983; 67: 968–977.

⁵ Lee IM, Manson JE, Hennekens CH, et al. Body weight and mortality: a 27-year follow-up of middle-aged men. *JAMA*. 1993; 270: 2823–2828.

⁶ Colditz GA, Willett WC, Rotnitzky A, et al. Weight gain as a risk factor for clinical diabetes mellitus in women. *Ann Intern Med*. 1995; 122: 481–486.

⁷ Kissebah AH, Krakower GR. Regional adiposity and morbidity. *Physiol Rev*. 1994; 74: 761–811.

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There is more definitive evidence that obesity and insulin resistance are linked to each other. Studies in obese adults have shown sustained improvement in cardiovascular risk in association with a 10% to 15% weight loss maintained over time.⁸ One other report, however, suggested that a weight loss of 16% resulted in a differential risk factor response, including a dramatic reduction in the incidence of type 2 diabetes but not in the 8-year incidence of hypertension.⁹

Prior to this generation with its record obesity rates, insulin resistance in children was rare. An association between adiposity and insulin resistance has been reported in adults and children.^{10, 11} Weight loss is associated with a decrease in insulin concentration and an increase in insulin sensitivity in adults¹² and

adolescents.¹³ In a study of 122 adolescents, obese individuals were significantly more insulin resistant and had an abnormal lipid profile when compared with lean subjects¹⁴; in this study, insulin resistance was significantly related to an abnormal lipid profile in heavy children but not in thin children, and insulin resistance varied directly with the degree of adiposity. Obesity and insulin resistance have also been shown to be associated with other risk factors, such as elevated blood pressure. Ethnic and sex differences occur in the insulin resistance syndrome in the United States, with a greater prevalence demonstrated in men and in African Americans.¹⁵

Nutritional Supplementation as a Lifestyle Therapy

Dietary supplements are another key to helping the body regenerate when metabolic risk factors are present. Adenosine monophosphate, gymnema sylvestre, chromium picolinate, alpha-lipoic acid, vanadyl sulfate, magnesium, garlic and a green complex are a few well-

⁸ Wing RR, Jeffery RW. Effect of modest weight loss on changes in cardiovascular risk factors: are there differences between men and women or between weight loss and maintenance? *Int J Obes Relat Metab Disord.* 1995;19: 67–73.

⁹ Sjostrom CD, Peltonen M, Wedel H, et al. Differentiated long-term effects of intentional weight loss on diabetes and hypertension. *Hypertension.* 2000;36: 20–25.

¹⁰ Arslanian S, Suprasongsin C. Insulin sensitivity, lipids, and body composition in childhood: is “syndrome X” present? *J Clin Endocrinol Metab.* 1996; 81: 1058–1062.

¹¹ Caprio S, Bronson M, Sherwin RS, et al. Co-existence of severe insulin resistance and hyperinsulinaemia in pre-adolescent obese children. *Diabetologia.* 1996; 39: 1489–1497.

¹² Su HY, Sheu WH, Chin HM, et al. Effect of weight loss on blood pressure and insulin resistance in normotensive and hypertensive

obese individuals. *Am J Hypertens.* 1995; 8: 1067–1071.

¹³ Rocchini AP, Katch V, Schork A, et al. Insulin and blood pressure during weight loss in obese adolescents. *Hypertension.* 1987; 10: 267–273.

¹⁴ Steinberger J, Moorehead C, Katch V, et al. Relationship between insulin resistance and abnormal lipid profile in obese adolescents. *J Pediatr.* 1995;126(5 pt 1): 690–695.

¹⁵ Falkner B, Hulman S, Tannenbaum J, et al. Insulin resistance and blood pressure in young black men. *Hypertension.* 1990; 16: 706–711.

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studied supplements to consider using. It is within this growing body of independent scientific evidence, as well as studies commissioned in-house that Legere Pharmaceuticals' medical team has formulated natural solutions to help your patients make the right choices and receive the right dosages for their individual needs.

COMBAT INSULIN RESISTANCE WITH DOCTORS NUTRITIONAL SUPPORT (D.N.S.)

Doctors Nutritional Support (D.N.S.) was formulated using therapeutic levels of key ingredients proven to effectively regulate insulin levels. These ingredients include vitamins, minerals, enzymes, amino acids, herbs and nutrients. This unique combination of ingredients promotes and encourages the body's natural mechanisms to balance blood sugar levels. Maintaining normal blood sugar levels is an important part of achieving long-term health and avoiding serious complications. **D.N.S.** can help your insulin resistance patients; just examine the proven pharmaceutical-grade ingredients in this proprietary formula.

The Role of Gymnema Sylvestre extract

Gymnema Sylvestre is a plant native to the tropical forests of India, and has been long used as a treatment for diabetes. Chewing the leaves suppresses the sensation of sweet. Recent scientific investigation has upheld its effectiveness in both Type I and Type II diabetes. It helps balance blood sugar and

control cravings. It also blocks intestinal absorption of sugar as the sugar passes through the system. Gymnema Sylvestre helps reverse changes induced by diabetes that affect the liver, kidneys, muscles and metabolic functions. There is some evidence that it may possibly regenerate or revitalize the insulin-producing beta cells of the pancreas. Gymnema Sylvestre is probably the most practical herbal recommendation for improving blood sugar control in diabetics.

Gymnema sylvestre extract has been reported to decrease appetite, improve weight loss and decrease serum lipid levels. A study in the journal "Diabetes, Obesity and Metabolism" reported that Gymnema sylvestre extract in combination with hydroxycitric acid and niacin-bound chromium reduced body weight in obese subjects.¹⁶

It is interesting to note that Gymnema extracts are without side effects and exerts its blood sugar-lowering effects only in cases of diabetes. Gymnema extract, when given to healthy volunteers, does not produce any blood sugar lowering or hypoglycemic effects.

The Role of Mormordica Charantia (bitter gourd)

Consistent in its ability to lower blood sugar levels, this bitter gourd with its leaves rich in calcium, magnesium, potassium, iron and phosphorus, significantly improved blood sugar

¹⁶ Preuss HG, Bagchi D, et al. Effects of a natural extract of (-)-hydroxycitric acid (HCA-SX) and a combination of HCA-SX plus niacin-bound chromium and Gymnema sylvestre extract on weight loss. *Diabetes Obes Metab.* 2004; 6(3): 171-180.

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management and glucose tolerance. It also relieves dehydration, which often accompanies diabetes.

The Role of Chromium

Chromium improves both insulin efficiency and glucose tolerance, which lowers blood sugar levels. Chromium deficiency worsens sugar metabolism and also may contribute to numbness, pain and tingling of the hands and feet.

The Role of Vanadyl Sulfate

Vanadyl sulfate is a form of the trace element vanadium and it is necessary for normal development and cell function in the body. Studies indicate that vanadyl sulfate plays a role in regulating the body's blood sugar levels, similar to insulin. Studies show that vanadyl sulfate mainly helps the muscle cells uptake glucose (instead of fat cells uptaking glucose). Basically, by mimicking the actions of insulin, vanadyl sulfate forces more proteins, amino acids and carbohydrates into the muscles.

Other Key Ingredients Provide Synergistic Benefits

In addition to the pharmaceutical-grade ingredients listed above, D.N.S. contains other key nutrients that provide synergistic benefits for patients presenting with metabolic risk factors. These include but are not limited to:

Omega-3 Fish Oils – acts as a natural blood thinner; supports cardiovascular health and helps lower blood fat levels to prevent clots

Garlic – helps lower cholesterol and

triglycerides in the blood; stabilizes blood sugar; enhances immunity and improves circulation

B6 – deficiency of this vitamin is linked to glucose intolerance which cause abnormal increases in blood sugar after eating; improves circulation in the hands and feet

B12 – helps prevent diabetic neuropathy

Biotin – improves metabolism of glucose

B-Complex – aids in protecting against nerve damage

Vitamin C – prevents deficiency that could lead to vascular problems in diabetics; helps improve glucose tolerance and functions of the liver; helps prevent sugar inside the cells from converting to sorbitol

Vitamin E – antioxidant; reduces cellular damage and promotes healing of diabetic lesions; helps prevent heart disease; reduces the tendency for sugar to bind to proteins in the blood; improves circulation

Vitamin A (25% as beta carotene) – aids in wound healing and the prevention of wound infection

Choline – important for circulation and liver health

Calcium – important for pH balance; maintaining normal insulin function

Copper – aids in protein metabolism and in many enzyme system functions

Magnesium – helps stimulate insulin production

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Manganese – needed for the repair of the pancreas

Cedar Berries – excellent nourishment for the pancreas

L-Carnitine – mobilizes fat

L-Glutamine – reduces cravings for sweets

L-Taurine - aids in the release of insulin

Huckleberry – helps promote insulin production

Brewers Yeast –regulates blood sugar levels and corrects deficiencies

Quercetin – helps protect the membranes of the lens of the eye from accumulations of polyols as a result of high glucose levels

Maitake Mushrooms – helps normalize blood sugar levels

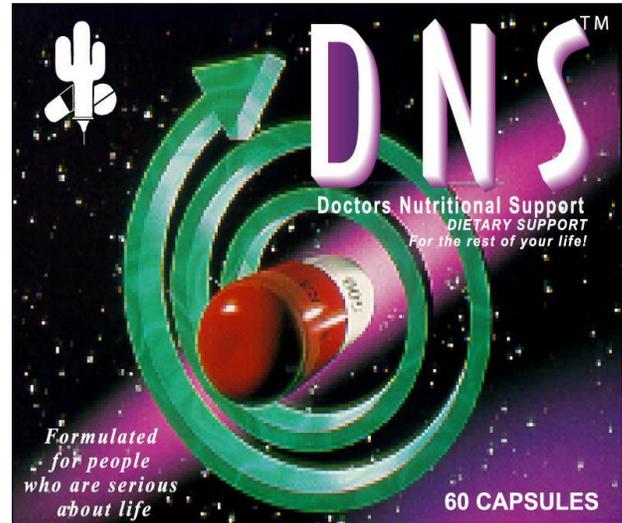
D.N.S. OFFERS AN UNCOMMON SOLUTION TO AN INCREASINGLY COMMON PROBLEM

Created with Legere Pharmaceuticals 35 years of product innovation and backed by years of clinical research, Doctors Nutritional Support (D.N.S.) is the most advanced dietary formula on the market today for optimal metabolic support. This comprehensive formula has been designed to help the body regulate insulin, balance blood sugar levels and curb cravings. D.N.S. benefits your patients by:

- *Abolishing taste of sugar*
- *Blocking carbohydrate absorption*
- *Promoting glucose metabolism*
- *Reducing the risk of carbohydrates*

turning into fat

- *Significantly reducing calorie intake causing weight gain*
- *Decreasing sweet and carbohydrate cravings*



ABOUT LEGERE PHARMACEUTICALS

Legere Pharmaceuticals has been a pioneer in preventive, holistic and alternative medicine for more than three decades. We research, formulate, market and distribute a line of therapeutic dietary supplements specially designed to meet the healthcare needs of physicians and their patients. Tested for potency and therapeutic application, our products deliver results. We offer private labeling, patient educational brochures and handouts to assist in patient compliance and retention. Physicians trust us because:

- Legere Pharmaceuticals provides high quality, alternative avenues for patient care

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that are focused on helping you identify and treat the cause, not the symptoms

- Legere Pharmaceuticals helps you proactively address patient health issues by explaining how nutritional supplementation can prevent future health issues
- When a patient purchases a Legere Pharmaceuticals product from your practice,

you are in the best position possible to monitor product protocol and usage

- Most importantly, Legere Pharmaceuticals gives you the assurance that you are recommending the best products available for your patient

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