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# Dr. Heather Fox Ph.D.

## January Newsletter

### Controlling High Blood Pressure

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*By Dr. Heather Fox Ph.D.*

High blood pressure affects more than 25 million North Americans and is a major risk factor for heart disease and stroke. It is estimated that less than one-third of people with high blood pressure control it effectively. More than 280 million prescriptions for drugs used to treat High Blood Pressure are filled each year in Canada.

Many medications prescribed today are intended to lower High Blood Pressure by increasing vascularity or blood flow through the *relaxation* of blood vessels. Vasodilation is broadly recognized as a significant element in effective treatment. Nitric Oxide is a critical factor in vasodilatation and low levels of this important molecule are associated with elevation in blood pressure, mental and physical fatigue, sexual dysfunction and more. Over the past several years the role of Nitric Oxide has fascinated many researchers and there are currently more than 73,000 research papers published documenting the action this important molecule supplies human beings.

Nitric oxide acts in many tissues to regulate a complex range of processes including its function as a natural and potent weapon against infections, as a regulator of blood pressure and as a moderator of blood flow to different organs. Nitric Oxide relaxes the smooth muscle in the walls of the blood

vessels. The endothelial cells that line the blood vessels release a spurt of Nitric Oxide which penetrates the underlying smooth muscle cells causing them to relax. This relaxation permits the surge of blood to pass through easily. Nitric Oxide also inhibits the aggregation of platelets preventing blood clots from forming and then interfering with blood flow.

Nitroglycerine, a drug familiar to most of us which is often prescribed to reduce the pain of angina, works by generating nitric oxide so that the walls of the coronary arteries and arterioles become relaxed. Three researchers involved in discovering and understanding the biological roles of Nitric Oxide in cardiovascular health, Robert F Furchgott, Louis J Ignarro and Ferid Murad shared a Nobel Prize in 1998 for their discoveries.

L-Citrulline is an amino acid that supports the body in optimizing blood flow through its conversion to L-arginine and then ultimately to Nitric Oxide. L-Citrulline was first isolated from watermelon and was later named after citrullus - latin for watermelon.

L-Citrulline is a nonessential amino acid not found in dietary protein. L-Citrulline is a precursor to the formation of L-Arginine and plays a vital role in the eventual transition from Arginine to Nitric Oxide. Most Arginine is used up fairly quickly in the liver and kidneys leaving only a small amount available to support cardiovascular health. Citrulline, as a precursor to Arginine allows for increased and sustained Nitric Oxide production in the endothelium for support of circulatory function.

Citrulline supplements are an important factor – and some research suggests Citrulline may be the preferred source of supplementation in the formation of Arginine and consequently of Nitric Oxide.

Some additional benefits of raised Nitric Oxide levels include:

### **Penile Erection**

The erection of the penis during sexual stimulation is facilitated by Nitric Oxide released from nerve endings close to the blood vessels of the penis causing blood to pool producing an erection. Recent evidence suggests that Nitric Oxide not only helps to produce an erection but also activates other steps of fertilization.

### **Nitric Oxide and the Brain**

Nitric oxide acts as a neurotransmitter in the central and peripheral nervous systems. Nitric oxide is a key messenger in the response of macrophages (immune system cells) to cancer cells and invading bacteria.

### **Killing Pathogens – Immune Support**

Nitric Oxide can be produced by a number of cells involved in immune responses. In particular macrophages can produce high concentrations of Nitric Oxide in order to kill specific target cells such as bacteria or tumour cells both malignant and benign. White blood cells also use Nitric Oxide to kill bacteria, fungi and parasites and also to defend tumours.

Many supplements available today make important contributions to supporting cardiovascular health, including Nattokinase which also promotes healthy blood flow while sustaining healthy levels of blood clotting factors. Coenzyme Q10 (CoQ10) dramatically prolongs the life of patients with heart failure, cutting the average yearly death rate by 26 to

59%. It is vital as a supplement for anyone with a history of low cholesterol or who is or has taken statin drugs. However, perhaps none are more important than beginning with a program that will optimize naturally occurring levels of Nitric Oxide and supporting optimal blood flow. The benefits of supplemental precursors to the production of Nitric Oxide may be significant to an enormous sector of the population ranging from Diabetics, to the Elderly and many others who seek to achieve good control of High Blood Pressure before it spirals dangerously out of control.

**End**

*If I regarded my life from the point of view of the pessimist, I should be undone. I should seek in vain for the light that does not visit my eyes and the music that does not ring in my ears. I should beg night and day and never be satisfied. I should sit apart in awful solitude, a prey to fear and despair. But since I consider it a duty to myself and to others to be happy, I escape a misery worse than any physical deprivation.*

*Helen Keller*

## **The Challenge of Diabetes**

*By Dr. Heather Fox PhD*

### **What Is Insulin?**

Insulin is a hormone and in fact was the first hormone ever discovered in 1920 by Banting and Best. Insulin opens the door on a number of cells, including muscle, red blood cells, and fat cells. In response to insulin, these cells absorb glucose out of the blood,

having the resulting effect of lowering high blood glucose levels into the normal range. Insulin delivers the glucose to the cells. Inside the cell, glucose is either used for energy or stored for future use in the form of glycogen in liver or muscle cells.

***However, what must be understood is that glucose is not the only nutrient delivered to cells by insulin! Essential minerals, vitamins and proteins are also escorted into the cells by insulin and in fact, with an excess of glucose present in the blood these important nutrients may rank second in importance if insulin is overwhelmed by responding to the sugar!***

### **Before Diabetes – Insulin Resistance**

Insulin resistance occurs when the normal amount of insulin secreted by the pancreas is not able to unlock the door to cells. To maintain normal blood glucose, the pancreas secretes additional insulin. Almost all individuals with type 2 diabetes mellitus (diabetes) and many with hypertension, cardiovascular disease, and obesity are insulin resistant. These diseases and conditions are predominantly found in countries with an improved economic status such as Canada. 20-25% of the ‘healthy’ population may in fact be insulin resistant.

### **Dangers of Excess Insulin**

**Fact:** Diabetics and others with Insulin Resistance have higher LDL cholesterol and Triglyceride levels

**Fact:** High levels of Insulin trigger excessive production of LDL cholesterol

**Fact:** People are taking statin drugs to ‘treat’ high cholesterol without ever considering the insulin connection.

**Fact:** The trans fatty acid molecule has had its molecular structure

changed through the process of hydrogenation so it is now an incomplete molecule whose sole mission in life is to make itself whole. It does this by attaching, or bonding to other molecules.

Trans fatty acid molecules are especially fond of hormones and insulin in particular. When insulin has a trans fatty acid molecule attached to it, it can no longer act as the key to open the cell receptors to usher in glucose and other nutrients. This means the insulin stays circulating in the blood even when it's no longer needed to metabolize glucose. A short time after eating the body adjusts blood sugar levels based on the amount of glucose present and will produce a second release of insulin if it appears necessary. If cells are unable to properly gauge the insulin that is already present insulin will continue to be produced even when there is still an abundant level present. This results in a metabolic drive to consume more food! There is no elevation in blood sugar to speak of but insulin is still present in excess because more was produced than was needed. The result is hunger, feeling drained, and other uncomfortable symptoms as well. Often, that hunger leads us to craving carbohydrates. The vicious cycle begins all over again.

The long-term effect is a higher consumption of carbohydrates, overeating, and a total inability to generate growth hormone (which is only released in the absence of insulin). Without growth hormone, less muscle is created, so there is less of an opportunity to burn the fat.

### What Does Diabetes Cost Us?

- 6th Leading Cause of Death in Canada
- Contributes to a variety of other serious conditions:
- Blindness
- Kidney Disease
- Memory Loss

- Amputations
- Heart Disease
- Obesity
- Diabetic Neuropathy
- Increased Infection
- Gum Disease
- Depression

- Erectile Dysfunction
- Vaginal Dryness

### Diabetic Treatment in Canada

In 2002 the Cost of Treatment was 13.2 billion. In 2005 the 3 Western Provinces spent 1.5 billion for doctor services alone! The average cost in drugs is \$5000 a year and drug costs are projected to rise by another 74% by 2016. The Canadian Diabetic Association is now calling for a "Catastrophic Drug Plan" expected to be announced by the federal government in June of 2007

### Type II Diabetes

90% of all diabetics have Type II Diabetes and 90% of all of those are overweight or obese. These same individuals often consume a diet with excessive trans fats and at the same time consume a diet with multiple deficiencies in nutrients. On top of the dietary problems diabetics are often inactive making it more difficult for glucose to enter the cells.

### What Goes Wrong?

#### Symptoms with Type II Diabetes

- Rarely as severe as with Type I initially
- Often diagnosed through routine blood work
- Have no defect in the ability to produce insulin
- Normal insulin levels are 31 units per day
- Type II diabetics produce as much as 114 units
- High Blood Pressure
- High LDL cholesterol
- Fatigue
- Thirst and Frequent Urination
- Blurred Vision
- Digestive Problems

### What Can You Do?

Nutritional support for the diabetic is vital. When insulin receptors have an impaired ability to 'pick up' insulin this in fact translates to an impaired ability to pick up those other important nutrients insulin delivers. These include vital nutrients such as magnesium, Vitamin C, essential amino acids (proteins), essential fatty acids and more. The diabetic, or any other individual with insulin resistance will undoubtedly be a candidate for nutritional deficiencies. This can be approached in two ways.

The first is to support the process of insulin metabolism and this must begin with the decision not to overwhelm the body with carbohydrate. Contrary to the position taken by many practitioners today, eating your pie and ice cream while you make use of drugs that act on insulin receptors may NOT be in the best interest of your health!

*The most important first step to management is to bring insulin levels down to a normal range, stop the pattern of insulin spiking, and increase the ability of insulin to deliver nutrients to cells.*

Once diet has been brought under control with a rather strict approach to limiting carbohydrate intake and assuring carbohydrates are complex, high in fibre such as what we see in leafy green vegetables and some berries, supplemental support can be extremely beneficial and in fact therapeutic.

### Chromium

Chromium is an essential trace mineral. Its main function is to work

with insulin, to metabolize carbohydrates, fats and proteins. Chromium is needed for proper insulin function. A recent study examining chromium supplementation and Type II diabetes was done in 1996. Researchers from the Human Nutrition Research Center of the United States Department of Agriculture collaborated with Chinese researchers from the Beijing Medical University. Three groups of 60 each: one group received placebo 2x per day, the second received 100 mcg 2x daily of chromium picolinate and the third received 500 mcg of chromium picolinate 2x daily. The results were impressive: blood glucose, insulin levels, and cholesterol all decreased, with the higher dose generally more effective than the 200 mcg. A preferred source is a tri-chromium (three sources of chromium) with cinnamon bark combination, containing 500 mcg of chromium.

### Vanadium

Vanadium is an essential trace mineral that may mimic insulin to help regulate blood sugar. It is found in black pepper, dill seed, and unsaturated vegetable oil, as well as in vitamin supplements.



### Zinc

Zinc is necessary for the normal production of insulin. Food sources of zinc include fresh oysters, ginger root, lamb, pecans, split peas, egg yolk, rye, beef liver, lima beans, almonds, walnuts, sardines, chicken, and

buckwheat. In a supplement of 30 mg. daily of zinc, be sure there is a minimum of 300 mcg. of copper added to assure a proper balance.

### Magnesium

People with diabetes are often deficient in magnesium, which is depleted both by medications and by the disease process. One double-blind study also suggested that magnesium supplementation enhanced blood sugar control. Generally, magnesium citrate is the preferred supplement at 500 – 1000 mg. daily.



### Vitamin C

Diabetics are at higher risk of infection and poor healing tendencies. Vitamin C is a critical supplement for the diabetic and should be taken at maximum tolerance levels. This vitamin is often consumed at levels of 3 – 6 grams daily and is comfortably used by the body when taken throughout the day and not in one sitting. I prefer to recommend a powder with a synergistic blend of Vitamin C and B vitamins, Alpha Lipoic Acid and CoQ10.

### Essential Fatty Acids – Omega 3

We generally over consume the Omega 6 group of fatty acids and from a supplementary point of view the most critical support should come from taking a high quality, cold water northern fish source of Fish Oil or Omega 3. Suggested amounts could range from 1 – 4000 mg. daily.

### Protein and Amino Acids

Amino acids such as L-arginine and Citrulline can contribute enormously to diabetic health by supporting cardiovascular and digestive systems through the production of nitric acid. In addition, a full amino acid supplement can assure that insulin has full access to delivering these important nutrients and supporting the cascade of processes that result.

### Cinnamon Bark

One of the most important and perhaps simplest things you can do to improve insulin metabolic process is add up to a 1/2 teaspoon of cinnamon to your diet each day. The active insulin-enhancing compounds in cinnamon are found in the water soluble portion and not the oil. Not only have they been found to increase insulin metabolism of glucose by up to 20 times, but they also have antioxidant activity.

### Gymnema

Gymnema is an Ayurvedic herb that is believed to have a marked effect on blood sugar control. Doctors often prescribe gymnema for mild cases of type 2 diabetes, in conjunction with standard treatments. A typical dose range is 400 to 600 mg per day of an extract standardized to contain 24% gymnemic acids.

### Alpha Lipoic Acid

In Germany, the antioxidant lipoic acid is used widely for the prevention and treatment of peripheral neuropathy in diabetes. This complication usually develops after many years, and is a painful condition affecting the nerves. Lipoic acid occurs naturally in the body, and it is often reduced in people with diabetes. It is involved in the energy metabolism in the body. A typical dose for diabetes is 300 to 600 mg per day, in two or three doses and eaten with food to prevent discomfort.

### **Green Tea Extract**

The compounds in these plants are powerful antioxidants, particularly against pancreas and liver toxins. While drinking green tea may indeed provide distinct health benefits overall, the potential for therapeutic value when green tea extract is taken as a supplement may be more important. Laboratory studies have also shown that green tea suppresses diet-induced obesity, a key risk factor in developing diabetes and metabolic syndrome.

### **Ginkgo Biloba**

In a preliminary clinical trial type 2 diabetics were given ginkgo extract

orally for three months, which significantly reduced free radical levels, decreased fibrinogen levels, and improved blood viscosity. Ginkgo extracts also improved retinal capillary blood flow rate in type 2 diabetic patients with retinopathy. Ginkgo has also been observed to lower blood glucose levels. Ginkgo was studied in type 2 diabetics at a dose of 120 mg for three months. Ginkgo supplementation produced an increase in liver metabolism of insulin and oral hypoglycemic medications, which corresponded to a reduction in blood glucose levels. Type 2 diabetics with pancreatic exhaustion received the most benefit. Ginkgo enhances liver uptake of existing insulin, thereby reducing high insulin levels.

\*\*\*Note on Sweeteners\*\*\*

While it is of great importance to lower carbohydrate intake while attempting to establish increased insulin receptor sensitivity and to reduce insulin spiking, this does NOT mean that using artificial sweeteners such as Aspartame or Splenda is a good food choice or one that will enhance health. There are many, many reports of both of these products causing serious health disturbances for people and should be avoided at all times.

Generally, stevia is a first choice in sweetening agents that do not result in insulin spikes. Other choices may include Xylitol and Erythritol.

*End*

# **Postponed Until SPRING!**

## ***Brendan Brazier***

### ***In Saskatchewan***

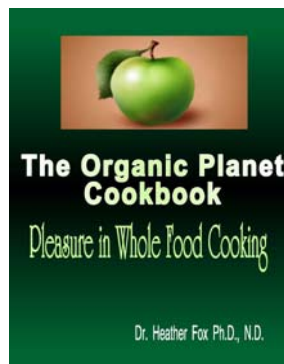
**Stress reduction through plant-based whole foods**



## HEALTHY COOKING

### With WHOLESOME FOODS

From *The Organic Planet Cookbook*  
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## Spinach and Cheddar Strata

**1 (10 ounce) loaf whole grain bread of your choice, cubed**  
**2 packages frozen chopped spinach, thawed and squeezed dry or 3 cups of fresh chopped spinach**  
**1/2 pound fresh mushrooms, thinly sliced**  
**3 cups extra old white cheddar cheese, diced**  
**14 large whole eggs**  
**3 cups milk or non dairy substitute of your choice**  
**sea salt and pepper, to taste**  
**2 teaspoons dry mustard (optional)**

1. Preheat oven to 350°. Grease a 9" x 12" baking dish.
2. Make a single layer of bread cubes in dish. Cover evenly with spinach and sliced mushrooms. Sprinkle with Cheddar cheese.
3. Make another layer of bread cubes. Whisk together eggs, milk and seasonings. Pour over layers making sure that all of top layer of bread is moistened.
4. Bake for 1 hour until puffed and lightly browned. A knife inserted in the center should come out clean. 10 minutes before serving, sprinkle with cheese and return to oven to melt.

## Pomegranate Lentil Soup

**3/4 cup Inari® red or brown lentils**  
**2 tablespoons butter or NOW® brand coconut oil**  
**1 medium onion, chopped**  
**8 cups filtered water (2 quarts)**  
**1 cup Inari® basmati rice**  
**1 teaspoon turmeric**  
**sea salt and freshly ground pepper to taste**  
**1/2 cup chopped fresh parsley**  
**1/2 cup chopped green onions**  
**1 cup Just Juice® pomegranate juice**  
**1 tablespoon butter**  
**2 tablespoons chopped fresh mint or 2 teaspoons crushed dried leaf mint**  
**1 tablespoon Inari® sultana raisins**

1. Rinse lentils several times. Set aside to drain. Melt 2 tablespoons butter or oil in a large saucepan. Add onion. Saute until onion is tender. Add water, drained lentils, rice, turmeric, salt and pepper. Bring to a boil. Reduce heat and cover. Simmer over low heat 40 minutes or until lentils and rice are tender.
2. Add parsley, green onions and pomegranate juice. Simmer 15 minutes longer. Melt 1 tablespoon butter in a small skillet. Add mint. Saute mint lightly and pour over soup. Sprinkle with raisins.

## Robust Cream of Broccoli and Hazelnut Soup Au Gratin

**1 tablespoon butter**  
**1 medium onion, chopped**  
**1 large bunch broccoli**  
**3 medium potatoes, peeled and diced**  
**6 cups Purely Bulk® mock chicken soup base no MSG reconstituted**  
**1 1/4 cups heavy cream (although truthfully I find this recipe does just as well with whole milk)**  
**1 cup roasted and finely chopped Inari® hazelnuts**  
**1/4 cup grated Parmesan cheese**  
**1 1/2 teaspoons salt**  
**1/8 teaspoon freshly ground pepper**  
**1 1/2 cups grated Gruyère cheese**  
**1 1/4 cups coarsely chopped Inari® hazelnuts**

1. Melt butter in a 4- to 6-quart soup pot. Sauté onion until softened, about 3 minutes. Cut broccoli into florets and thinly slice tender upper portion of stems. Add to pot along with potatoes and chicken stock. Cover and simmer until potatoes and broccoli are tender, about 20 minutes. Purée mixture in several batches in food

processor or if you have a hand blender this works just as well. I usually only puree a little more than half of the soup so it retains some texture. Return purée to kettle and stir in cream, finely chopped hazelnuts, Parmesan cheese, salt and pepper to taste. Gently heat being careful not to scorch.

2. To serve, ladle 8-ounce servings into broiler-safe dishes. Sprinkle each with 1/2 ounce grated Gruyère cheese and 1/2 ounce coarsely chopped hazelnuts. Place under the broiler until cheese is melted and hazelnuts are browned, about 1 minute.

## Buttered Nut and Lentil Dip

**1 cup butter or half butter and NOW® brand coconut oil**  
**1 small onion chopped**  
**1/3 cup Inari® red lentils**  
**1/2 cup grated carrot**  
**1 1/4 cups vegetable stock**  
**1/2 cup Inari® whole almonds crushed**  
**1/2 cup pine nuts**  
**1/2 teaspoon ground coriander**  
**1/2 teaspoon ground cumin**  
**1/2 teaspoon grated fresh gingerroot**  
**1 teaspoon chopped fresh cilantro (optional)**  
**sea salt and pepper**

1. Melt half the butter in a saucepan and fry the onion over a medium heat stirring frequently until golden brown.
2. Add the lentils and vegetable stock.
3. Bring to a boil, then reduce the heat and simmer gently, uncovered, for about 25-30 minutes, until the lentils are tender. Drain well.
4. Melt the remaining butter in a small skillet.
5. Add the almonds and pine nuts and fry them over a low heat, stirring frequently, until golden brown.
6. Remove from heat.
7. Put the lentils, almonds, and pine nuts, and carrot with any remaining butter, into a food processor.
8. Add the ground coriander, cumin, ginger, and fresh cilantro.
9. Process for about 20 seconds, until the mixture is smooth.

10. Season the dip with salt and pepper and garnish with sprigs of fresh cilantro.

11. Serve with fresh vegetable slices of your choice or whole grain crackers or bread sticks.

## **Mandarin Goji Cranberry Nut Tart**

### **PASTRY CRUST**

**1 cup whole-wheat pastry flour or unbleached white flour (or a mixture of both)**

**1 tablespoon Inari® cane sugar**

**1/8 teaspoon sea salt**

**1/2 teaspoon cinnamon**

**1 teaspoon grated orange zest**

**7 tablespoons cold butter or chilled**

**NOW® brand coconut oil, cut into small chunks**

**2 tablespoons cold water mixed with 1/2 teaspoon NOW® brand vanilla extract**

### **TART FILLING**

**1 cup Inari® dried goji berries**

**2 whole mandarin oranges**

**3 cups fresh or frozen cranberries**

**1 cup Inari® cane sugar**

**1 teaspoon cinnamon**

**1/8 teaspoon ground cloves**

**2 teaspoons butter**

**1 tablespoon Just Juice® cranberry juice**

**1 cup finely chopped walnuts or almond slivers**

### **PREPARATION:**

1. For the crust, combine the flour, sugar, sea salt, cinnamon, and orange zest in a large bowl or food processor. Add the butter and cut in by hand, or pulse until the butter is broken up into pieces the size of baby peas. Drizzle in the water-vanilla mixture, and mix until large, moist-looking crumbs have formed.

2. Pour the mixture onto a clean surface and if there is any dry flour left, work it into the dough with a few more drops of water. Gently shape the dough into a small, flattened ball and cover. Refrigerate for 15 minutes to chill.

3. After chilling roll the dough out into a 10-inch round, then drape into a 9-inch tart

pan. Set pan in freezer. Preheat oven to 375°F.

4. To make the filling, cover the dried goji berries with hot water; set aside. Peel the oranges into sections then thinly slice the sections crosswise. When you're ready to start cooking, drain the dried goji berries.

5. In a 3-quart saucepan, combine the drained dried goji berries, fresh or frozen cranberries, orange slices, orange juice, and sugar. Cook over medium-high heat, stirring occasionally with a rubber spatula, until the cranberries have popped and released their juices, about 12 minutes. Stir in the cinnamon, cloves, and flour; cook for 1 more minute, then stir in the walnuts or almond slivers. Remove from heat.

6. Set the frozen tart shell, still in the tart pan, on a sheet pan. Spoon the tart filling into the shell, then smooth the top. Dot the butter over the filling. Cover lightly with parchment paper or tinfoil. Bake in the center of the oven until the crust is lightly browned, about 35 minutes. Remove, then spoon orange juice. Serve at room temperature with a dollop of whipped cream if desired.

***End***

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