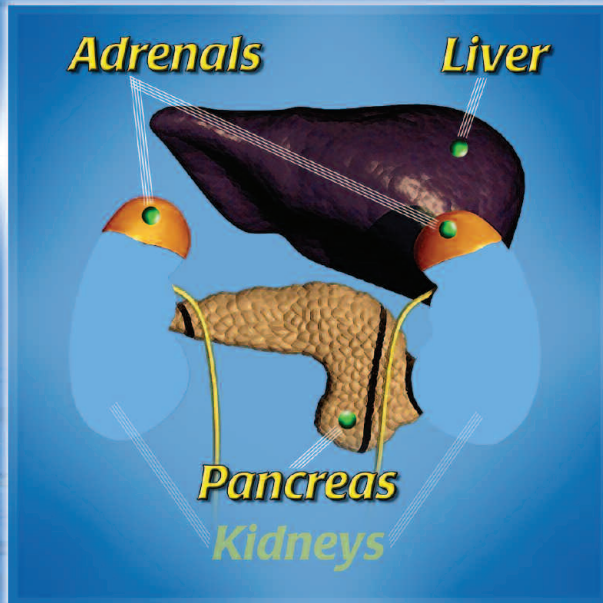


Glutamine is an amino acid that has many functions in the body. These include serving as the precursor to the antioxidant glutathione. Glutamine also participates in glycogen synthesis. Glycogen is the storage form of carbohydrates. Nitrogen compounds that are required for the manufacture of nucleotides which are used to make DNA and RNA are provided by glutamine.

Glutamine is involved in maintaining the pH balance in the body. Glutamine is synthesized from glutamic acid and ammonia. Ammonia is a toxic waste compound with a high pH value, meaning that it is basic (as opposed to acidic). When ammonia levels are elevated, the body clears ammonia from the blood by synthesizing glutamine. If the blood is too acidic (pH too low), the body can break down glutamine into glutamate and ammonia to increase the pH of the blood.



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The following supplements are in each packet:

**A-P-L Support™ Adrenal-Pancreas-Liver\*  
3 Veggie Capsules**

Supplement Facts	
Serving Size: Three (3) Veggie Capsules	
Amount Per Serving	% Daily Value
Vitamin C (as Calcium Ascorbate)	250 mg 417%
Thiamin	30 mg 2000%
Pantothenic Acid (as Calcium Pantothenate)	250 mg 2500%
Zinc (as Zinc Monomethionine**)	15 mg 100%
Manganese (as Manganese Amino Acid Chelate)	5 mg 250%
Chromium (as Chromium Polynicotinate**)	150 mcg 125%

Proprietary Blend 100 mg\*  
L-Glutamine (Free Form Amino Acid) & Vanadium (Vanady) Sulfate

\*Daily Value not established.

OTHER INGREDIENTS: Rice Flour, Cellulose & Vegetable Magnesium Stearate.

\*\*OptiZinc® and ChromeMate® are Trademarks of InterHealth Nutraceuticals Inc.

**Alpha Lipoic Acid  
100 mg Veggie Capsule**

Supplement Facts	
Serving Size: One (1) Veggie Capsule	
Amount Per Serving	% Daily Value
Alpha Lipoic Acid	100 mg *

\*Daily Value not established.

OTHER INGREDIENTS: Rice Flour, Cellulose & Vegetable Magnesium Stearate.

**Cinnamon  
700 mg Veggie Capsule**

Supplement Facts	
Serving Size: One (1) Veggie Capsule	
Amount Per Serving	% Daily Value
Cinnamon Bark Powder (Cinnamomum verum)	700 mg *

\*Daily Value not established.

OTHER INGREDIENTS: Cellulose, Rice Flour & Vegetable Magnesium Stearate.

**Support  
Sugar Regulation  
Naturally™**

**A-P-L Support™  
Adrenal-Pancreas-Liver\***

- Vitamin C – concentrated in the adrenals\*
- Thiamin – carbohydrate conversion into energy\*
- Pantothenic Acid – energy production from food\*
- Zinc – insulin production\*
- Manganese – metabolism of carbohydrates, amino acids and cholesterol\*
- Chromium – carbohydrate metabolism\*
- Vanadium – glucose metabolism, glycogen synthesis in the liver\*

**Alpha Lipoic Acid**

- May provide support in maintaining blood sugar levels already within normal range\*
- Alpha lipoic acid is both a water-soluble and a fat-soluble antioxidant\*

**Cinnamon**

- Use as part of your diet to help maintain healthy blood sugar\*
- Supports maintenance of blood sugar levels already within normal range\*

▼Already within normal range

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

# Sugar Regulation Is Controlled By The Body



## Here's How...



# Blood Sugar Regulation

**Blood sugar is regulated and maintained in the body by the adrenal glands** working in conjunction with the liver and the pancreas. The way the system works is as follows: The liver converts food into sugar; some will be stored for future use and some will be secreted into the bloodstream to be used as fuel. The adrenal glands act as regulators monitoring the amount of glucose in the blood.

**When blood sugar levels rise above a particular level** based on current demands the adrenal glands communicate with the pancreas asking it to secrete the hormone insulin. Insulin makes it possible for cells to use sugar as fuel.



**Cells have receptors on their surfaces** to transfer glucose into the cells' interiors to be used as fuel. Insulin works with these receptors to make this process possible.

**Before sugar levels drop too low** in the bloodstream, the adrenal glands communicate once again with the pancreas, this time telling it to secrete glucagon which raises blood

glucose levels. Glucagon raises the blood glucose level by causing the liver to convert stored glycogen into glucose. Through the communication between the adrenal glands, the liver and the pancreas, blood sugar levels are kept within the normal range.

**The adrenal glands are rich in Vitamin C** and pantothenic acid. Vitamin C is involved in hormone production including cortisol which is often referred to as the stress hormone. Cortisol raises blood sugar levels. Pantothenic acid plays a key role in cellular energy production as part of Coenzyme A (CoA). The pancreas contains the minerals zinc and chromium.



**Zinc is required by the pancreas for insulin production;** insulin being the hormone essential for sugar regulation. Chromium is also found in the pancreas; it helps liberate glucose from muscle, so it is also part of the mechanism regulating insulin or sugar availability. Should there be a fasting state, physical exertion, or stress, there is a higher demand on the body for fuel. In other words, there is a greater need for more sugar to be released into the bloodstream.



## METABOLISM OF GLUCOSE

**Metabolism is the term used to describe the sum of all chemical processes** that take place in the body. Larger molecules, such as glycogen, are broken down into smaller molecules, such as glucose in a process called catabolism. The hormone insulin serves as the catalyst for the process of catabolism of carbohydrates.

**Insulin is manufactured in the pancreas** and requires the minerals chromium and zinc for its production. Other nutrients important in the process of metabolism include Vitamin B1, Niacin, and Iodine.

## NUTRITIONAL SUPPORT

**Chromium** is involved in carbohydrate, lipid (fats), and nucleic acid metabolism. It functions in carbohydrate and lipid (fat) metabolism as a potentiator of insulin action.

**Insulin** is a naturally occurring hormone released by the pancreas in response to increased levels of sugar (glucose) in the blood. Chromium entered into the science of mammalian nutrition in the late 1950's when Schwarz and Mertz reported that rats fed chromium deficient diets exhibited glucose intolerance.

**Vitamin B-1 (Thiamin)** is needed for carbohydrate metabolism. Vitamin B-1, also known as is essential for digestion and for the functioning of the heart.

**Zinc** is a component of insulin.

**Pantothenic Acid** is necessary for growth, and it contributes extensively to energy functions and the skin.

**Manganese** promotes enzyme activation. An enzyme is a protein that speeds up or causes chemical reactions in living matter. An example would be the conversion of glycogen to glucose to energy that the body can use.

**Cinnamon** has a long history of use. Studies have demonstrated cinnamon's ability to support the action of insulin. Lower fasting blood glucose levels are supported through the intake of cinnamon.

**Alpha Lipoic Acid** is both a water- and a fat-soluble antioxidant helping to protect cells from free radical (oxidative) damage. It is also involved in carbohydrate metabolism.

## THE ADRENAL HORMONES

**Epinephrine causes almost the same effects as norepinephrine**, but differs in that it has a several times greater metabolic effect on tissue metabolism. Epinephrine can increase the metabolic rate of every cell in the body by as much as 100% above normal, influencing other metabolic activities such as glycogenolysis in the liver and muscle and glucose release in the blood.

## NUTRIENTS FOR THE ADRENALS

**The following nutrients play a role in the various functions and activities of the adrenals including hormone & energy production:**

**Pantothenic Acid** plays a role in the release of energy from carbohydrates.

**Vitamin C** occurs in large concentrations in both parts of the adrenal gland, the medulla & the cortex. It is essential in the production of the two active hormones epinephrine and norepinephrine by the adrenal medulla. Even though the adrenals are rich in Vitamin C, upon secretion of corticosteroids large amounts of Vitamin C are lost from them.

