HYPOGLYCEMIA
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Hypoglycemia simply means low blood sugar. It is really an inability to properly convert sugar in a normal fashion. It is caused by the overproduction of insulin or hyperinsulinism. Just a few years ago, hypoglycemia was seldom heard. Today more and more physicians are finding that many of their patients that were hard to diagnose are actually hypoglycemic.

The following is a list of symptoms and the percentage of patients that generally experience the symptoms:

- Nervousness 90%
- Irritability 89%
- Faintness, cold sweats 89%
- Exhaustion 87%
- Depression 77%
- Vertigo, dizziness 73%
- Drowsiness 72%
- Headaches 71%
- Digestive disturbances 69%
- Insomnia (awakening and inability to return to sleep) 62%
- Constant worrying 62%
- Unprovoked anxieties 62%
- Mental confusion 57%
- Internal trembling 57%
- Heart palpitations, rapid pulse 54%
- Muscle spasms 53%
- Numbness 51%
- Indecisiveness 50%
- Unsociable, behavior 47%
- Crying spells 46%
- Lack of sex drive (females) 47%
- Allergies 43%
- Incoordination 43%
- Leg cramps 43%
- Lack of concentration 42%
- Blurred vision 40%
- Twitching and jerking of muscles 40%
- Itching and crawling sensations of skin 39%
- Gasping for breath 37%
- Staggering 34%
- Sighing and yawning 30%
- Impotence (males) 29%
- Unconsciousness 27%
- Night terrors, nightmares 27%
- Rheumatoid arthritis 24%
- Phobias, fears 23%
- Neurodermatitis 21%
- Suicidal intent 20%
- Nervous breakdown 17%
- Convulsions 2%

The list of symptoms might make you think that it covers almost everyone. Everyone has at least one of these symptoms, but if the symptoms persist, you should be checked for hypoglycemia. A multitude of people are hypoglycemic and never know it. The symptoms are masked by the excessive ingestion of sweets, drinking of alcohol, consumption of coffee or smoking continually. Many people are misdiagnosed and are being treated for something else. Many patients are told their symptoms are caused by nerves or other "neurotic conflicts."

Hypoglycemia is very complex. Let's take an overview of hypoglycemia to explain just what occurs in the body. The human pancreas is actually two kinds of glands in one. One of them produces digestive secretions that is secreted into the intestine to help digest all forms of food—proteins, carbohydrates, and fats. The other gland is an endocrine gland that releases a hormone called insulin into the bloodstream. Insulin aids in burning sugar, and helps in recycling our reserve sugar supplies when they are needed.

![Typical Hypoglycemic Curve](image-url)
Hyperinsulinism is thought to be caused by an overproduction of insulin in response to a sugar, especially an excessive intake of sugar and caffeine compounded by emotional stress. The body is not able to handle the concentrated (simple) sugars which often make up a large part of the American diet today. Many foods are laden with sugar. Some foods have sugar added to them as a filler since sugar blends with most foods. (This is especially true of processed foods.) Although the body uses sugar as a fuel, the use of concentrated forms such as pies, pastries, sugar-coated cereals, donuts, candy or alcohol overloads the body's delicate control mechanism. The pancreas produces too much insulin in response to the overload of sugar. The body is depleted of the circulating blood sugar and causing the body to cry out for more food. The increase of insulin in blood sugar or glucose causes the levels to fall. If the blood sugar falls below the normal limit (usually less than 60 milligrams daily), symptoms develop. Generally, these symptoms appear about two hours after a meal. The symptoms are quickly reversed by eating. If the person ingests sugars or carbohydrates, the blood glucose or sugar rises, but usually only briefly as the pancreas secretes insulin to lower the blood glucose. Once again, the person sets off the roller coaster of symptoms.

Recall, the purpose of insulin is not to burn up sugar. The purpose of insulin is to carry the sugar to the cell, open the door of the cell, and allow the sugar to get inside. There, the sugar can combine with oxygen to form or create energy. Insulin is merely a key to get sugar into the cell. It is also the key to get excessive amounts of sugar into the fat cell where it is converted into triglycerides.

Triglycerides are formed in the liver and fat cell, chiefly from sugars. In the carbohydrate intolerant individual, there has been noted a usual tendency to convert sugars into triglycerides, in particular in the fat cell. Presence of excess triglycerides tend to "clog up" the free flowing characteristics of the bloodstream. They can clump to form "plugs" in the tiny blood vessels preventing oxygen and other nutrients from getting to the cell. These are primarily what is called LDL or low density lipoprotein factors in the blood. HDL or high density lipoproteins are considered good and a protectant against heart disease. These are primarily of the cholesterol family.

There are many forms of stress in our environment, and all directly affect our adrenal or stress glands. Examples of stress include infection, pain, business problems, family pressures, domestic disagreements, overexertion, burns, fractures, caffeine, alcohol and drugs. Prolonged stress has a devastating effect on the body, particularly the adrenals; it robs the body of its storage of nutrients and amino acids.

How is the diagnosis of hypoglycemia made? A glucose tolerance test is done. After a 12 hour fast, a blood glucose is taken. Then approximately 100 grams of glucose (sugar) is given. Another blood glucose is taken every hour for a period of five to six hours. Many people find that at the second or third hours that they feel faint and may even lose consciousness due to the extreme fall in blood glucose levels. Commonly, the glucose tolerance test is done for three to four hours, but some people do not get the symptoms until the fifth or sixth hour. The deviations above and below the fasting level are

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**FOOD GUIDE FOR HYPOGLYCEMICS**

**Milk:**
Skim, nonfat dry reconstituted milk, buttermilk, skimmed evaporated milk, soybean protein milk or goat's milk.

**Vegetables:**
Fresh, frozen or canned vegetables. Starchy vegetables such as peas, corn, baked potatoes with skins are high in fiber.

**Breads & Grains:**
Whole grains, breads and cereal. (Examples: stone-ground whole wheat or whole grain flour, brown rice, barley, buckwheat, bulgar, millet, quinoa, amaranth, oatmeal, oat bran, wild rice, whole grain cereal, cornmeal.)

**Meats & Meat Substitutes:**
Lean beef, lamb, pork, veal, poultry, fish, and shellfish. Low fat cheeses, eggs. Lentils, soybeans, dried peas and beans. Tofu and other soybean meat substitutes. Peanut butter and other nuts (without salt).

**Miscellaneous:**
Decaffeinated coffee and tea, herbal teas without caffeine, sugar-free sodas without caffeine. Mineral waters. Artificial sweeteners and artificially sweetened jelly, jams, and syrup. Nutrasweet gelatins. Spices, herbs,
diagnostic. It is possible to show a fairly normal blood sugar curve in the laboratory in the person that is borderline hypoglycemic. While under the "normal everyday" stressors of job and other factors, the person may actually become hypoglycemic due to the added strain on his adrenal glands.

So what is the treatment for hypoglycemia? The goal of treatment is to slow down the absorption of food through the intestine. This is best accomplished through changes in eating habits and the foods eaten.

Some general guidelines are:

1. Avoid simple (refined) carbohydrates. These are foods high in sugar content such as jams, table sugar, honey, syrup, molasses, donuts, cakes, cookies, pastries, mashed potatoes etc.
2. Increase your intake of complex carbohydrates. Complex carbohydrates are foods that are absorbed more slowly than simple carbohydrates and do not cause rapid increases in blood glucose levels. Some examples of complex carbohydrates are vegetables, legumes (beans) of all kinds except refried beans, high fiber breads, whole grain cereals, etc. If complex carbohydrates are largely removed from the diet, the body loses its ability to handle carbohydrate properly.
3. Increase your intake of fiber. Fiber is the indigestible portion of fruits, vegetables and grain that adds bulk in the intestine and facilitate the movement of food through the intestines. Carbohydrates are more slowly absorbed when they are part of a high fiber meal.
4. Eat smaller meals with snacks between meals and at bedtime.
5. Eat fruit, either fresh or canned without sugar rather than drink juice. The added fiber will slow down the sugar absorption. Conversely, juice is a source of simple carbohydrates, and is absorbed very quickly into the blood stream.
6. Avoid foods and beverages containing caffeine. Caffeine often produces the same symptoms as hypoglycemia and may make you feel worse.
7. Avoid alcoholic beverages. Alcohol lowers blood glucose levels, especially when consumed on an empty stomach.
8. If you are overweight, try to reduce to your desirable body weight. Excess weight interferes with the body's ability to use insulin.
9. Decrease your fat intake. A high-fat diet has been shown to interfere with insulin use. Fat is high in calories—nine calories per gram as opposed to four calories per gram for carbohydrates and proteins. Lowering your intake of fat can help you lose weight. Replace those fat calories with complex carbohydrates.

This article is not intended to give medical advice or replace the services of a physician. It is for educational purposes only.

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**FOODS TO AVOID**

**Milk:**
Whole milk, 2% milk, chocolate milk, ice cream, sweetened milk drinks, sugar-fruited milks.

**Vegetables:**
Vegetables with sauces and glazes. Sweet pickles. Fried vegetables.

**Fruits:**
Fruit drinks, punches, and -ades. Fruits canned or frozen with syrup or sugar.

**Breads & Grains:**
Donuts, sweet rolls and pastries. Presweetened cereals.

**Meats & Meat Substitutes:**
Meats prepared with sweetened sauce or gravy. Meats high in fat, such as luncheon meats, hot-dogs, processed cheeses and cheese spreads, fried chicken or fish, or other fried meats.

**Fats & Oils:**
High cheese or high fat sauces and gravies.

**Miscellaneous:** Regular soda water. Coffee or tea or soda water containing caffeine. Alcoholic beverages. All other sweetened beverages. Sugar, brown sugar, powdered sugar, honey, jams, jelly preserves, syrup, molasses, candy. Regular gelatin. Pies, cakes, cookies, puddings, and other sweet desserts.

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