

## **Nutrition: How Sweet It Is**

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Summary: Some sugars are good for your health.

**F**rom rotting teeth and expanding waistlines to crankiness and diabetes, sugar is the culprit behind much of what ails us. The average American consumes 39 teaspoons of the stuff a day—a recipe for a public health disaster.

Yet, perhaps counterintuitively, sugar is now being hailed as a healing substance at the forefront of a revolutionary science called glyconutrition. Before you start popping M&Ms as if they were miracle pills, be warned that it's not that kind of sugar that holds medicinal powers. There's sugar and there are sugars.

Over 200 sugar compounds, technically known as saccharides, occur naturally in plants. And eight of them have been identified as essential to optimal human health.

Two of those, saccharides galactose and glucose, are commonly found in the foods we eat. Galactose is a milk sugar and glucose is the sugar that sits on your table; it's also a component of fruits and grains.

Both galactose and glucose are broken down in the body and used as fuel. While the body can use other nutrients as fuel, namely fat, the brain relies almost exclusively on glucose to power its intense metabolic activity.

The other six essential sugars were for the major portion of human history part of the everyday diet, as our ancestors dined on whatever plants they could find. Ninety-nine percent of the diet homosapiens evolved on was made up of vegetables, fruits, nuts, seeds and legumes.

Today, however, the variety of sugars is largely absent from our table, thanks to our reliance on processed foods made with refined sugar— a substance that sweetens our tea and coffee and lurks in sodas, fruit juices, bread and cakes. The problem is not only that it has displaced other essential sugars but that it has been stripped of its plant source and, with it, its nutritional value.

Meanwhile, the body requires the sugars missing from our diet for some very strategic uses— such as, to coat nearly every cell in the body. “They are like a Swiss army knife which the body can use for different tasks,” says Emil Mondono, M.D., pediatrician and coauthor with Mindy Kitei of *Sugars That Heal*.

These sugars are not converted one to the other in the body. Once ingested, they combine with proteins and fats to create compounds that allow cells to communicate with each other. And no cells communicate more with each other than brain cells.

Glycoproteins, for example, make up the receptors that neurotransmitters such as serotonin bind to on nerve-cell surfaces. So they are critical to every thought and feeling that you have.

Glyconutrients also play key roles in stressed states. Overactivation of the stress response is now thought to be the primary mechanism of depression. The receptor for corticotropin releasing factor, a key activator of the body-wide stress response, is a glycoprotein. Dysfunction of the receptor is considered by many to be the core defect in depression and anxiety disorders.

Galactose specifically contributes to the makeup of galactolipids, basic components of nerve cell membranes. They too influence the fluidity of the membrane and facilitate all cell transactions.

On the frontiers of medicine, researchers are testing therapeutic applications of various glyconutrients missing from our everyday diet. Preliminary clinical trials have shown that supplementation with glyconutrients may enhance memory, support a variety of higher brain functions, and help curb the stress response.

They also reduce allergies and allay symptoms of arthritis, diabetes, lupus and kidney disease (in animals). Several labs are looking into ways to use sugar compounds to improve the medicines used to fight anemia, HIV and cancer.

Natural sources of glyconutrients exist all around us. You might not know it because nutritional sugars are not necessarily sweet; most are tasteless. Mannose is one of the eight essential saccharides and it's found in cabbage, broccoli, and seeds. It's thought to be important in the structure of nerve cells.

Fucose, another glyconutrient, is thought to be particularly active at the synaptic junctions between nerve cells. It's found in mushrooms and in seeds. Xylose, yet another, is present in yeast, rye and barley.

Until we better understand how to heal ourselves with what we choose to eat, these so-called "sweet medicines" can be found in powdery nutritional supplements, derived from plant substances. But your best bet, as always, is to eat a variety of unprocessed foods.