From our friends at BACK TO HERBS

Back to Herbs
The Complete Alternative Health Resource
Eflash

News You Can Use

Glyconutrients

Interest by the medical and scientific community to research and study the subject is underway with a fervor; because the thousands of testimonials and anecdotal tales are certainly not to be dismissed lightly.

There have not been any human studies on the subject of “glyconutrients”, specifically: Glucose, Mannose, Galactose, Fucose, N-acetylgalactosamine, N-acetylglucosamine, N-acetylneuraminic Acid, Xylose, and how when combined together they improve cellular communication and enhance the immune system. Some other reported benefits in taking glyconutrients are that they: build resistance to disease, increase over all health and vitality, alleviate allergy symptoms, slow down the aging process, decrease inflammation, increase natural killer cells and macrophages and improve blood sugar disorders.

It is thought that “glyconutrients” are eight sugars (saccharides) the body uses for cell to cell communication. These sugars are not used by the body as a source of energy/fuel as are other carbohydrates. Without proper cell to cell communication, the immune system cannot determine which cells to attack or which cells to leave alone, which cells are healthy or which cells are unhealthy. When the immune system attacks healthy cells, it is called an auto immune disorder. When the immune system fails to attack unhealthy cells, sickness and disease sets in the body. “Glyconutrients” are believed to be not a diet option but a requirement for everyone, called by many “the missing link” to good health.

From the Longevity Institute
NEWSLETTER 8 - Extension 2: Saccharides in Our Biochemistry (Updated September 2005)

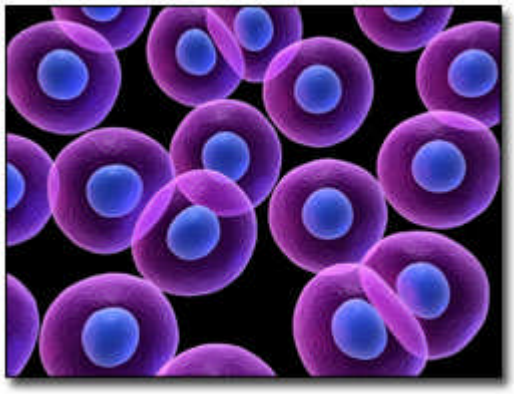
Composition of the three main polysaccharides occurring in our diet:
Human diets have changed over time and not always for the better. Hunter-gatherer societies ate a variety of foods including roots, wild grains, berries, leaves and nuts.

After the advent of agriculture, people settled down to regular consumption of a more limited variety of easy-to-grow foods, such as potatoes, wheat, and rice. Archeologists tell us that the earliest hunter-gatherers people were actually taller, healthier, and had better teeth and bone structure than the agricultural people that came later. More recently, modern refining methods further diminished the variety of nutritional components consumed in conventional diets. Whole wheat was replaced by refined flour, whole wild rice by polished rice and whole potatoes by mashed potato flakes. Most of the source for the saccharides needed by our cells were lost by these changes. Science is only scarcely beginning to understand the consequent effect on our health.

Saccharides in Human Biochemistry

Human biochemistry synthesizes glucose from lactate and from pyruvate. Human biochemistry is able (in perfect health condition) to convert the two or three saccharides occurring in modern diet into seven of the eight saccharides and saccharide derivatives it needs to assume all of its functions. Synthesis and conversion occurs with the assistance of vitamins from the B group and with minerals, as magnesium, manganese, selenium, iron, and zinc acting as enzyme activators.

The eight saccharides and saccharide derivatives the human biochemistry uses are: Glucose, Galactose, Mannose, Fucose, Neuraminic N-acetyl acid (NeuNAc), N-acetyl Glucosamine, N-acetyl Galactosamine, and Xylose. Human biochemistry uses these eight saccharides in cell and organ structure, in cell communication, and in immunity.



Saccharides in Cell and in Organ Structure

Saccharides participate in cell and organ structure in association with proteins. Saccharides account for 5% of the mass of a cell membrane. The most frequent saccharide in cell and organ structure is N-acetyl glucosamine, followed by N-acetyl galactosamine.

N-acetyl glucosamine and N-acetyl galactosamine -- absent in our diet -- have to be synthesized from the saccharides provided in the diet. The synthesis of these two saccharides starting from glucosamine and galactosamine -- if these saccharides are available in the diet -- is much less expensive for our biochemistry than their synthesis from glucose.

Saccharides in Cell Communication

Cells communicate with "messages" they carry on the surface of their membrane. The "messages" are glycoforms, molecules formed essentially of saccharides. Glycoforms protrude from the external surface of the cell membrane. Glycoforms contain the monosaccharides mannose, N-acetyl galactosamine, and galactose.

Saccharides in Immunity
The immunity of a cell depends on the "messages" expressed by the glycoforms on the surface of its membrane. If in a message, words are missing or misspelled -- if some saccharide is missing in the glycoform-- the message is erroneous with all the consequences of it. An error in the message disguises the real identity of the cell bearing it. An error in the message can bring other cells "reading" it to act as if the bearer of the error was a foreign body.

Many diseases have in common the inability of certain cells to send correct messages -- to synthesize the correct glycoforms. This inability may result from an error in the genetic code that governs the synthesis of the glycoforms. The inability may also result from the absence of the needed saccharide in the diet or from a combination of the two conditions. The Carbohydrate Deficient Glycoprotein Syndrome results from a mannose deficiency.

Saccharides in Health
Any defect in the enzymatic processes involved results in altered health conditions. The list of health conditions related to saccharide deficiency comprises but is not restricted to: Collagen diseases - Endocarditis - Hashimoto disease - Juvenile chronic arthritis - Mixed connective tissue disease - Myocarditis - Myositis - Nephritis - Peritonitis - Pericarditis - Pleuritis - Polymyositis-dermatomyositis - Progressive systemic sclerosis - Rheumatoid arthritis - Sjsrgen's syndrome - Skin rashes - Synovitis - Systemic lupus erythematosus - Vasculitis

In health conditions related to saccharide deficiency, laboratory tests indicate : Alteration of serum complement - Antinuclear antibodies - Cryoglobulins - Elevated muscle enzymes - False serologic positive test for syphilis - Hemolitic anemia - Immunoglobuline excess or deficiency - Leukopenia - Rheumatoid factor - Thrombocytopenia

Saccharides in Research
There is much work to do on saccharides. Research is only beginning to decipher the numerous implications of the saccharide metabolism and the significance of a particular saccharide deficiency.

The biochemistry of mannose has recently received more attention. Mannose is an essential part of cell glycoforms. Until now it was assumed that all the mannose cell may need is converted from glucose occurring in the diet. Recent research indicates that mannose -- when available in the diet -- contribute to 75% of the mannose utilization for glycoform synthesis (G.Alton 1997). For people with a low glucose to mannose conversion, supplementing the diet with mannose significantly contribute to maintaining their health.

Conclusion

Saccharides play an important role in cell and organ structure, in cell communication, and in immunity.

Our refined diet does not provide the eight saccharides our biochemistry needs. The conversion of the two or the three saccharides occurring in the diet into the missing saccharides - although theoretically possible -- is often not effective.
Many health-compromised situations result from this inability. It has become obvious that supplementing our diet with the missing saccharides is helpful in maintaining and restoring health.

Yours in Good Health!

Sincerely,

Chris Ritchason
Dr. Jack & Verlyn Ritchason, Founders
The Back to Herbs Team

References

http://ezinearticles.com/?Glyconutrients-Research-Continues-To--Show-Promise-For-Good-Health&id=154384
http://www.longevinst.org/nlt/newsletter8ext2.htm