When we supplement the nutrition that we no longer get from the soil and our food, we may be ignoring one important factor: glyconutrients. Their prime role is to facilitate communication between cells. If we are working to an end with a group of people, 'doing our own thing' does not get results. We have to work as a team and communicate. So too with the body. And the group of foods that do the job for us, it has recently been discovered, are glyconutrients.

Carbohydrates as Biological Sugars

Another word for carbohydrates is biological sugars, and glyco-science is the study of carbohydrates/biological sugars, and how they work. It may seem strange to think that sugars could be vital for health, if you only think of sucrose, or table sugar. But there are eight sugars, or saccharides, that are required for cellular communication, and knowing about them, could provide another clue to the mystery of how we thrive, or degenerate into disease and ill-health.

Carbohydrates are the most complex in the four major classes of biomolecules, which also include proteins, nucleic acids and fats. For a long time researchers concentrated on the key role of protein and amino acids, ignoring carbohydrates because of their complexity. But, prompted by the wonderful properties of aloe vera, researchers were forced to look at the role of glyconutrients in human health, and their life-giving potential.

Glyconutrients - Supplements to the Rescue?

If you read the few articles and books on glyconutrients you will be told that this is the latest buzz word. But the dearth of information on the subject, apart from academic research and emailed testimonials, perhaps reflects the fact that you have to hunt hard to find glyconutritional supplements, usually within the multi-level marketing system, apart from sourcing glyconutrients from food, or herbal medicine. We are told that our diets no longer supply enough glyconutrients. Although the body can manufacture some of the sugars not available from our diets, the energy consumed to perform this task, and the depletion of enzymes caused by the process, points to long-term supplementation as an alternative. This is especially the case when there are liver problems or depleted energy reserves.

But is there another way? If the body is capable of producing essential glyconutrients, how can we support those abilities, rather than assume we should bypass them entirely? We will come back to this question, after examining in more depth the source of glyconutrients, and how they work.

Wired for Action

A glyconutrient is a biochemical that contains a sugar molecule. Thus glycoproteins have a sugar molecule attached to the protein, and glycolipids have a sugar molecule attached to fat.

Glyconutrients are the 'good' sugars that attach themselves to cell molecules, allowing cells to communicate with each other. Every system in the body needs such communication, especially the immune system, when trying to maintain equilibrium.

Grasping the distinction between good sugars and bad sugars is important. The 'bad' sugar, sucrose, has been highly processed, has scant nutritional value, and artificially boosts energy levels by causing a rush of insulin to be followed pretty soon by a corresponding drop. The treadmill of sugar cravings to keep that energy up is set in motion.

Good sugars, monosaccharides or glyconutrients, are an entirely different matter. There are eight: glucose, galactose, fucose, mannose, xylose, N-acetylgalactosamine, N-acetylgalcosamine and N-acetyltalosaminic acid. The following analogy provides an understanding of how they facilitate communication. Without the correct combination, communication between cells is disrupted with consequences that are detrimental to health.

Herbal and Dietary Sources of Glyconutrients

Folk wisdom can provide us with much useful information about the benefits of glyconutrients. Customs evolve in certain ways because they work. It is only later that science digs deep to find out why.

Aloe Vera and Mushrooms

I have a friend who lives in a village in Rajasthan, India, who farms fruit and vegetables organically. Apart from accessing the wisdom of his nomadic forebears, he is also a qualified agronomist and plantsman. Aloe vera had been used for hundreds of years in his region because of its remarkable healing properties. Unusually, the local variety can be used fresh as salad with the whole leaf, as well as dried. In the
Sugars

Glucose is converted from white sugar, fructose and starchy foods such as rice, corn, potatoes and wheat. It is not hard to conclude, therefore, that the average western diet of high sugar consumption and carbohydrates ensures plentiful supplies of glucose.

Galactose is obtained from the conversion of lactose (milk sugar) and from dairy products. Apart from dairy products, galactose is also found in figs, grapes, peas, tomatoes, hazelnuts, beans and fruit with high pectin content, such as apples, as well as many other fruit and vegetables.

Fucose is found in breast milk, along with four other essential sugars, and in many medicinal mushrooms. It enhances brain development and memory function, prevents respiratory tract infections, and inhibits allergic reactions.

Mannose is one of the most important glyconutrients because of its central role in cellular communication and healing. It also controls tumour growth, and inhibits bacterial, viral, parasitic and fungal infections. It plays a part in producing cytokines (the chemicals which help to fight invaders, and cause us to feel achy when we have flu), reduces inflammation in rheumatoid arthritis, and lowers blood sugar in diabetics. Mannose is a major constituent of the aloe vera plant, and is not readily available in our diets.

Xylose is not readily available in our diets. It is antibacterial and antifungal, and also plays a role in cellular communication. Intestinal disorders can disrupt its absorption.

N-acetylgalactosamine is not well-researched, and is not readily available from our diet. We do know that tumour spread is contained, and that cellular communication is helped.

N-acetylgalactosamine has numerous benefits, including immune modulation, anticancer effects, repair of the mucosal lining in the digestive tract, and support for the growth of beneficial bacteria in the gut. Glucosamine, the metabolic product of N-acetylgalactosamine is found in highly concentrated amounts in the joints of mammals. Its primary purpose is to stimulate the production of cartilage compounds and components necessary for joint function and constant repair. To this end, it contributes to the production of connective tissue, which is the main constituent of cartilage and tendons, and which also forms the matrix of bone. You could describe it as the glue which holds us together. Its use for joint repair in osteoarthritis is well documented. Research sponsored by the nutritional company Health Perception has shown that glucosamine prevents dehydration of cartilage, decreasing normal spinal shrinkage as we get older.

N-acetyleneuraminic acid is found in human breast milk, and is particularly important for brain development and learning. It also aids immune function, influences blood coagulation, and lowers cholesterol.

It is interesting that these villagers sometimes combine aloe vera with milk. The aloe vera when taken with raw milk makes the digestion of lactose easier in order to create galactose. Another source of glyconutrients is mushrooms. We can learn a lot from traditional Chinese herbal medicine about the best way to use them to maximize the release of glyconutrients. Organic mushrooms are better because mushrooms concentrate heavy metals from their growth medium. They should be cooked, rather than raw, because raw ones have fewer benefits. Best of all, as in Chinese medicine, is to make a tea with dried mushrooms, and drink the liquid. Dried mushrooms conserve most of the nutrients. The best mushrooms are shiitake, maitake and oyster, and each variety has different

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Aloe Vera is a Source of Glyconutrients

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benefits and sugar combinations. Some mushrooms thin the blood, as do pectins, so do not take with blood-thinning drugs or aspirin.

Crustaceans
One of the essential sugars, N-acetylglucosamine is found in the shells of crustaceans, including shrimp, krill and crabs. In some parts of Africa crushed chitin (the polysaccharide derived from N-acetylglucosamine) from shrimp shells is used as a condiment. Chitin is also the tough material found in nails. No folk culture, I assume, uses crushed nails as a condiment, but eating crushed shrimp shells could improve nail strength!

Glyconutrient-Rich Foods
What is there in our own western food culture to guide us towards a glyconutrient rich diet? Eating slow-cooked porridge isn’t a bad start, because oat bran is a good source of glyconutrients. My grandmother ate a raw onion every day, and had remarkably few health problems until she died from an accident at the age of 83. By eating the onion raw she was ensuring an adequate intake of enzymes, as well as glyconutrients. Other staples in the traditional English diet are also recommended: leeks, broccoli, parsnips, carrots, celery, peas, brussel sprouts, cabbage, cauliflower, pears and plums, and the pectin from tomatoes and apples. Now that we have extended our food choices, many of us regularly use garlic, and can include coconut flesh, figs and mangoes, also excellent sources of glyconutrients, especially galactose.

Causes of Glyconutrient Depletion
Even if your diet is plentifully supplied with an adequate intake of glyconutrient rich foods, from fruit, vegetables and starchy grains, your liver may not be up to the job of converting some of the sugars into those that are missing. Without enough raw food to balance the loss of enzymes from cooking food, you may be depleted in the enzymes needed for the conversion process. You may also be struggling with mercury toxicity from filled teeth and general chemical overload from our toxic environment. All these deplete the enzymes essential for detoxification and the conversion process. Moreover, according to Australian naturopath and herbalist, Glen Gillard, many people in the west have fatty livers and congestion in the hepatic ducts. They need lipotropic nutrients and sulphur containing amino acids, such as methionine to break down the fat surplus and congestion. They also need bitter herbs to stimulate bile from the gall bladder. Without this, and good hydration, it can take a long time to rebuild liver function. And without optimum liver function you will not be able to maximize your own ability to convert the basic building blocks into useable glyconutrients.

One solution is to take a quality glyconutrient supplement to support many aspects of the health of the gut, and prevent an overload of endotoxins being produced and absorbed. The natural vegetable fibres in plant foods contain the soluble fibres and alpha-lipoic acid that help to regulate and maintain gut health. Whole foods of this nature can prevent putrefaction, and remove toxic metabolites of hormones and various other morbid wastes from the system.

Case Study
Glen Gillard put together a wholefood glyconutrient combination, with herbs containing mucilage for a patient who had cancer and was undergoing chemotherapy. She was grossly underweight and had constant diarrhoea. It helped to stop the wasting, and normalized her bowel movements in less than a week.

Clinical Benefits of Glyconutrients
Wholesome glyconutrients contain antioxidant enzymes to detox the system and liver, such as Super Oxide Dismutase. They also provide the amino acids for the production of Glutathione, necessary for the conjugation of poisons in the liver to render them harmless. Once the liver is running well it can convert all, and more of the sugars the body needs, from just one sugar molecule – glucose.
The most important and therapeutic factor in products where the sugars are isolated are the mannose and N-acetylglucosamine, as these are mucopolysaccharides, and help gut repair. Glucosamine rehydrates cartilage and prevents metastasis. Glutamine provides the colonocytes with fuel to rebuild the villi in the intestines.

There is no doubt that glyconutrients are a powerful tool in the armoury of aids to get well from a wide variety of health problems. But it would make sense, with the help of your practitioner, to focus primarily on liver function before considering isolated sugar supplements. Long-term use may be necessary if you do not 'clean up' the liver as part of the treatment. Looking for underlying causes of health problems should also not be ruled out (such as mercury amalgam toxicity and organophosphate poisoning). In addition, ensuring that absorbability is maximized by having a good balance of healthy gut bacteria.

For specific problems, consider supplements with isolated glyconutrients, such as aloe vera for gut problems and glucosamine for joint problems. Alternatively, consult a Chinese medical herbalist for individually formulated herbal teas based on your particular needs, which includes glyconutrients from mushrooms.

Those of us who find the solution to long-term health problems in just one product are very fortunate. For most of us, it is a more complex journey, involving a broad-spectrum nutritional approach, and underlying interventions elsewhere as well, e.g. photons of light from low level laser energy, which also enhances cell-to-cell communication.

Glyconutrients may not be the cure all some would have us believe, but with their potential to get our cells talking, as part of a broader package, they are capable of helping to create change, supporting the wider quest for balance and wellbeing.

Feel the power of optimal cell-to-cell communication

No combination of vitamins, minerals, amino acids or herbals can replace the saccharides found in this product.

In an age when natural products have become a new national focus, no technology offers more promise than the discovery and use of certain carbohydrates. Some researchers call Ambrotose complex one of the most important and exciting nutritional discoveries in recent years. This nutritional supplement provides raw materials for the body to use to promote optimal cellular communication. It is a glyconutrient, a blend of specific plant saccharides that provides support for the immune system. These saccharides are necessary for the body's creation of glycoforms, the structures on cell surfaces used to communicate with other cells.
Glyco Nutrition Blend
G.N.B.

Glyco Nutrients are highly concentrated foods that give the body nutritional support to assist the self-healing process. The ingredients in G.N.B are in excellent balance and may assist with the absorption and assimilation of other remedies.

G.N.B. was the first superfood green product to incorporate the methylating benefits of MSM and Dimethyl-Glycine. Packed with highly nutritious food factors and concentrates to support the body systems. Loss of energy and poor intestinal motility require high efficiency foods.

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For more information on this amazing food product and our great range of supplements, visit our website or give us a call on

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References

Further Reading

About the Author
Gill Jacobs MSc Dip Clin. Hyp NLP Coach GQHP M.AMT is a Health Writer, and Hypnotherapist/EFT practitioner. As a pioneering health writer on medical conditions which were initially misunderstood and ignored by mainstream medicine (Candidiasis and Chronic Fatigue Syndrome), Gill co-ran Candida Workshops for several years, finally producing a video to support Candida sufferers at home. She now runs a company, Light for Health Ltd, promoting Low Level Laser Therapy. She may be contacted via gill@lightforhealth.co.uk; www.lightforhealth.co.uk

Ambrotose®
Every Day.

Immune Support Formula

Ambrotose® complex provides raw materials that the body can use to promote optimal cellular communication. It is a glyconutritional – a blend of specific plant saccharides designed to support the immune system. These saccharides are necessary for the body’s creation of glycoforms, the structures on cell surfaces used to “talk” to other cells.

Effective communication between cells supports:
• Proper gland and organ function.
• Proper system function, including your natural defense and endocrine systems.
• Optimal health.

In an industry where natural products have become the new national focus. The discovery and use of certain saccharides stands out as having much promise. Some researchers call Ambrotose® complex one of the most important and exciting nutritional discoveries in recent years.

No combination of vitamins, minerals, amino acids or herbs can replace the saccharides found in this product.

Ambrotose® complex – the nutritional science breakthrough available only from Mannatech

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Kimberley Gridley on 01689 609615 or email kimberleygridley@yahoo.com or visit mannapages.com/healthwealthwisdom
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