Studies Show Smart Sugars More Beneficial Than Previously Thought

Plant saccharides metabolize to form glycoproteins in the human body.

Smart Sugars Lesson #76

by JC Spencer

Smart Sugars, orally ingested, result in glycosylation to glycoprotein receptors sites on Human Cells. An open-label dosing study was done to evaluate the safety and impact of a dietary plant-derived polysaccharide supplement on the N-glycosylation status of serum glycoproteins in healthy subjects.

The functional role of dietary carbohydrates in nutrition is one of the most complex and at times controversial areas in nutritional science. Biologists, glycobiologists and neuroscientists had long questioned if the consumption of specific sugars had any glycosylation benefits. Their doubt of efficacy was based on the digestive destruction of the sugars before they could have benefit in the human body. Any and all doubt was removed by this study. Confirmation that these sugars are not destroyed by the digestive system is also evident in every nursing baby because the same sugars are at work in colostrum and mother's breast milk.

The source for this report comes from Sir Joseph Hotung Centre for Musculoskeletal Disorders, Division of Cellular and Molecular Medicine, St George's University of London, London, UK. In-vitro and in-vivo studies suggest that certain dietary saccharide biopolymers can have bifidogenic and or immunomodulatory effects, and that some could represent preferential substrates or precursors that can impact cellular glycosylation.

This open-label study was in two phases: pilot study (n=6 individuals) to assess safety and dose, and a larger study (n=12) to evaluate specific glycosylation changes. Serum N-glycosylation profiles, using mass spectrometry, were monitored at weekly intervals, for 7 weeks, to evaluate baseline levels and normal fluctuations. The individuals were then monitored for a further 7 weeks, during which time increasing doses of the glyconutritional complex was ingested (1.3-5.2 g/day).

No adverse events were encountered. The polysaccharide supplementation resulted in distinct changes in the relative intensities of seven biantennary N-glycans ($P<0.001$), and a significant overall shift towards increased sialylation. Regression analysis revealed a dose-dependent decrease in mono- and di-galactosylated structures (coefficient -0.130 decrease/week: $P=0.02$ and -0.690: $P=0.005$), and a concomitant increase in disialylated glycans (× 1.083: $P<0.05$).

Conclusion of the supplementation with the dietary plant-derived polysaccharides resulted in verifying significant changes in serum protein N-glycosylation in healthy individuals. Exactly how glycosylation occurs is ongoing research programs in many universities. Also, much research is required to evaluate biological significance.

Leading U.S. Government agencies have assembled a stellar group of glycoscientists who formed a committee to develop the roadmap for the future of glycomics. The project title is Transforming Glycoscience. Glycosylation is now recognized paramount to medical research by NIH, FDA, NSF, the National Academy of Sciences, and the National Research Council.

Source: http://www.ncbi.nlm.nih.gov/pubmed/21224866

www.GlycoscienceNEWS.com

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http://www.endowmentmed.org/content/view/826/106/

Change Your Sugar, Change Your Life
http://DiabeticHope.com

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