



Tools for Repairing Your Neurons with New Stem Cells

Studies reveal damaged brains and spinal cords benefit from Smart Sugar

This lesson touches on the regenerative strategies of spinal cord injury.

Smart Sugars Lesson #98

by JC Spencer

Have you ever laid awake at night wondering how embryonic stem cells decide what they want to be when they grow up? Embryonic stem cells have not yet been instructed how to repair or build functional cell structures and organs. No scientist understands exactly how they decide but we have discovered that mannose and other Smart Sugars help them make the right choices. If they make the wrong choice, it can mean death.

Put on your microscope and let's look at how we can work with stem cells. The neurotrophic factor is vital in the development of stem cells. Neurotrophins deal with the nourishing of embryonic neurons to help them grow up to be well mannered adult cells. The neuropeptides regulate the growth, survival, and deciding factors.

Neurotrophins help design and program the stem cells for the job needed anywhere in the body. Instructions are given for them to migrate to the designated area of the brain or region of the body for them to begin their work.

Like the rest of your body, stem cells need proper nutrition. With proper exercise you improve blood flow throughout the body with about 25% of the oxygen going to the brain. Rehydration is more much important than most people understand. Very few people drink enough clean water needed to flush out the trash.

Regeneration of neurons is important for everyone if they have neurodegenerative challenges or not. We have learned that we can stimulate stem cell proliferation within the human body with specific sugars. Neural-specific glycosylation of the embryo demonstrates the cell's potential role and interactive influence. As stem cells mature, glycan expressions are ready to direct damage control of tissue.

The neurotrophic factor was included in a recent study dealing with enhancing the neurotrophin-3 (NT-2) bioactivity. The sugar Trehalose was shown to be the most effective additive for stabilizing NT-3 during sonication (sound waves) and lyophilization (freeze drying). Another study conducted in 2001 concerned nerve growth factor in the treatment of neuronal diseases used Trehalose in the formulation to protect the cells from degradation.

There is a new found hope for those with cognitive

impairment and some people are seeing reversal of memory problems. Help arrives in the form of regular exercise combined with a proper diet and Smart Sugars. Each stem cell, and every cell for that matter, have glycan instructions and an operations manual unique for the challenge the human body has right now. The proper care and feeding of the glycans is paramount. The reason for today's health challenges may be that the glycans have not been properly cared for as in days gone by. But, this is a new day filled with new insight.

Neurotrophins containing high-mannose glycosylation are critical to our optimization of mental and motor skills. These molecule building blocks contribute to structure of the neurons and action of the neurotransmitters. Individuals with neurodegenerative challenges, as with Alzheimer's disease, have been shown to have much lower levels of neurotrophins than more normal functioning brains.

The cell's development and function depend on its portfolio of Smart Sugars. We see high-mannose glycans take the lead role in coupling other sugars with proteins to provide actual packages of messages. Scientists were surprised to discover the communication is quite complex, containing detailed blueprints for repair or construction of complete organs. The expressed oligosaccharides on the cell reflect the cell's identity and influence its cell interactions and control of pathogens.

Researchers have learned that specific glycosylation, as in fucosylation or mannosylation, provides the stem cell with the ability to induce glycan expressions that complement the previously identified developmental and innate immune functions of the glycoprotein receptors. Your life depends on Smart Sugars.

Source: <http://www.molbiolcell.org/content/16/12/5761.full>

www.GlycoscienceNEWS.com

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

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