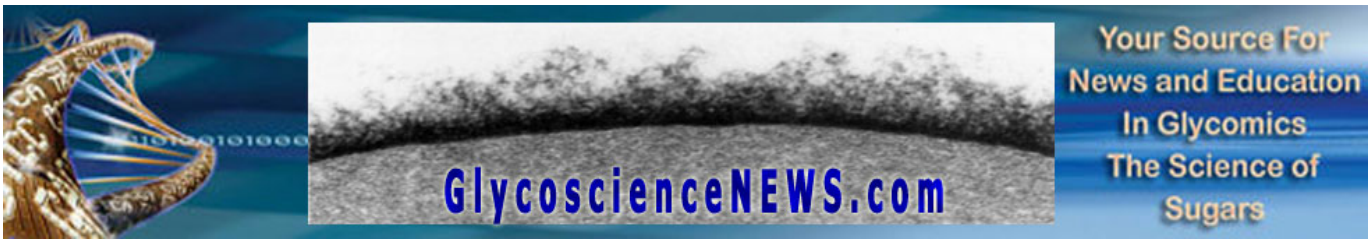

Why is pH Fusion Tea So Unbelievably Functional?

Research scientists learn more about the mystery of the possible fusion solution: pH, fusion, ion gates, glucose/sodium transport, Trehalose and how neurological benefits are achieved to improve mental celerity, Alzheimer's, Parkinson's, MS and ALS

by JC Spencer

Glycoscience Lesson #33
Part Three of Four

Fusion results

from the process of combining multiple distinct entities into a new whole. Fusion results in a new function beyond the individual components.

How to Open Ion Gates in the Cell Wall

The ion gates are opened and closed by signals according to the needs of the cell and the environment around the cell. A slight increase in the pH environment around the cell can open ion gates.

Transmembrane proteins create water-filled ion pores which can transport hydrophilic molecules. Glycolipids (inside the cell) and glycoproteins (on the cell surface) provide the communication. Specific Smart Sugars are the building blocks for the glycolipids and glycoproteins with Trehalose, when present, assisting in the proper folding of the proteins. Improper folding of the proteins is the cause for all neurodegenerative challenges.

The Glucose/Sodium transport system and HOW IT WORKS

The pH Fusion Tea design is to enable molecules to pass through the membrane by a conformational change in the shape of the transmembrane protein when it binds with the molecule to be transported.

Glucose and sodium couple to form a co-transport system that uses the positively charged sodium ions which are attracted to the negative area to increase the higher concentration on the outside of the cell.

Explaining Ion Gates and ATP

Voltage gated channels allow sodium into the cell and similar channels let potassium out of the cell. Transporters use ATP energy to move ions and small molecules through the membrane. Flow of current through a single ion gate has been measured with the patch clamp technique at ~7,000 sodium ions transported within ~1 millisecond that the gate is open.

Neurons and muscle cells have a negative membrane potential. The inside of the cell is more negative than the outside with the propensity to push sodium outside.

Sodium ions build an electrostatic charge on the cell membrane. ATP pumps ions uphill against their electro-chemical gradients through the membrane by a special protein enzyme known as sodium potassium ATPase that serves as a pumping mechanism. This process occurs within the cell for optimal distribution of cellular chemicals.

Action potential conducts an electrical impulse as the positive charge flows toward negative charge. As the membrane is made more permeable to sodium, it rushes INTO the cell like a speeding bullet.

Negatively charged proteins are manufactured inside the cell. Proteins within the cell membrane transport glucose. Due to the electrochemical gradient, sodium enters a binding site specific for it on the protein, and when this is accomplished, the protein changes its shape (allosteric reaction), so that sodium can bind and be transported into the cell. This co-transport of multiple substances is transported into the cell together. To take in the proper amount of sodium, we increase the concentration gradient outside of the cell and therefore increase sodium's ability to bind to transport proteins.

In Part Four, we will discuss:

- **pH Fusion Tea is Designed to Support Red Blood Cells**
- **Vital Importance of Trace Minerals**
- **We invite others to research with us.**
- **Sources and References**

Sources and References

This lesson is a summary of the complex working of the Glucose/Sodium Transport System discussed in Chapter 6 of The Trehalose Handbook Vol. One and Chapter 10 of The Trehalose Handbook Vol. Two entitled "*A Quick Study of the Importance of Trace Minerals in the Human Body*".

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