New Evidence How a Sugar Protects Cells

Smart Sugars Lesson #28

by JC Spencer

The two deadly words, DEHYDRATION and BENZENE, are the epitome of sapping the last drop of water and life out of a living cell.

Today's labs allow us to observe up-closer in more detail and from the evidence to theorize new possibilities. Here, we apply the discipline of **Quantum Glycobiology** to better understand the force produced by the actual bond of the two glucose molecules of the sugar trehalose. It is the activity of this unseen force that creates a stress protecting shield around cells.

We are improving our vision to better see through the demarcation line between physics and quantum physics and to postulate new possibilities and predictions.

Remember, **QG** is applying unseen forces that are overlooked or considered unimportant in basic physics. Quantum physics is the intricate working of physics that we are beginning to understand as we observe up-close unexplained phenomena.

Various Royal Sugars are giving us a unique opportunity to study and experience their phenomena. Why do these sugars have such benefit to the mental and motor skills of the human body?

Contributing to this quantum study is a Japanese paper pre-published July 9, 2011 and posted on www.PubMed.gov by the NIH U.S. National Library of Medicine ahead of print in the Journal of Physical Chemistry B.

These researchers made an interesting observation when they introduced trehalose into the experiment of DEHYDRATION and BENZENE.

We have known that there are unknown hidden influences within the trehalose bond. Somehow, this bond contributes to protecting cells from stress as it strengthens the cell membrane with a hydration shell. Trehalose is a non-reducing disaccharide made from two glucose molecules bonded by an á,á - 1, 1 glycosidic link. It is this link that separates trehalose from other disaccharides.

In Lesson #10, I discussed how researchers at the Université de Lausanne in Switzerland were surprised to learn that trehalose hydration cells form shields against electron beam microscopy damage.

This most recent research team in Japan were investigating interaction between trehalose and aromatic compounds when they found evidence for formation of stable intermolecular complexes of trehalose with benzene.

Many research papers validate evidence that trehalose hydrates the cell membrane in plants and animals and protects the cells from stress. Now, we are observing "spooky action" of unseen causes for the stress protecting qualities of trehalose. Better understanding of what we observe will follow.

The benzene around the trehalose contains part of the answer to how cells are protected. We can calculate the potential of unseen forces as functions caused by the distance between molecules as with trehalose and benzene.

The researchers discovered from this study that the benzene molecule became located only around the hydrophobic side of trehalose (resistant so as to avoid wetting) where the first hydration shell is not formed. They concluded that benzene binds to trehalose in a fashion where damage from dehydration is minimized.

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