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Neuroprotection: One cell at a time

Brian Sims
University of Alabama, USA

The central nervous system (CNS) is unique in many ways such as the complexity involved in forming barriers to shield the brain from toxins/insults. There is the blood brain barrier, blood/CSF barrier, CSF/brain barrier and the intrinsic cellular defense system. All of these systems have the common goal of minimizing the stress load seen by the central nervous system. The last system involved in brain defense is located inside the individual cell. There are many proteins involved in cellular defense. One of the most crucial substances in the cell is glutathione. Glutathione is a tripeptide (glutamate-cystine-glycine) that acts as an intrinsic antioxidant and is critically regulated. One of the most critically regulated steps in this process is the importation of cystine. The protein that is critically involved in this step is called the cystine-glutamate exchanger, or System Xc. System Xc exchanges cystine into the cell and releases glutamate into the extracellular space. System Xc regulation has proven to be a novel neuroprotective pathway.

Biography

Sims has completed his Ph.D and MD from University of Alabama at Birmingham and postdoctoral studies Washington University-St. Louis School of Medicine. He is a Neonataologist interested in Neonatal Brain Injury and Developmental Neurobiology. He has published several papers in reputed journals on neuroprotection..

BSims@peds.uab.edu