STRONG CHILDREN'S RESEARCH CENTER

Summer 2013 Research Scholar

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ABSTRACT

Title: Elucidating the mechanism underlying the protective effects of erythropoietin in the developing brain.

Background: Hypoxic Ischemic Encephalopathy (HIE), a brain injury caused by a combination of inadequate blood flow and oxygen to the brain, is a common occurrence in newborns leading to death in 15-20% of cases and severe neurological damage in another 25%. While therapeutic hypothermia can have some benefit on the prognosis of an infant suffering from hypoxic insult, this treatment can only be utilized in term or near term infants and its availability is limited. Recent research has shown that administering exogenous erythropoietin (EPO) may have neuroprotective effects on infants suffering from hypoxic insult and further that the EPO pathway plays an important role in normal neural development, however, little is known regarding the underlying mechanisms.

Objective: The goal of our study is to elucidate the molecular mechanisms underlying the neuroprotective effects of EPO in the developing brain.

Hypothesis: We hypothesize that in the developing brain, EPO signaling promotes specific patterns of epigenetic modifications, transcription factor binding, and mRNA expression.

