Inhibition of microRNA Let-7i to Enhance Functional Recovery from Stroke

Description:
Researchers at the University of North Texas Health Science Center have developed a novel therapeutic strategy to treat stroke. The research team discovered that the expression of a microRNA, Let-7i, was increased in models of experimentally-induced ischemia/stroke. Let-7i, in turn, negatively regulates brain cell expression of two key mediators of progesterone-induced neuroprotection: Brain-derived Neurotrophic Factor (BDNF) and progesterone receptor membrane component 1 (PGRMC1). Inhibition of Let-7i enhances the protective efficacy of progesterone and improves functional recovery in an animal model of stroke via upregulation of BDNF.

Market Need:
The incidence of stroke in the US is approximately 800,000 per year. Stroke is the fifth leading cause of death and a major cause of disability in the US, costing approximately $34 Billion annually. The therapeutic options for treating stroke are limited. Tissue plasminogen activator (tPA) is the only FDA-approved drug for treatment of acute ischemic stroke. The therapeutic window for beneficial treatment with tPA is limited to 3 to 4½ hours after the onset of stroke symptoms. There is a critical need to develop better treatment options for stroke and other brain injuries with greater efficacy and extended time windows for beneficial administration.

Benefits and Advantages:
- Although substantial experimental evidence supports the neuroprotective properties of progesterone for brain injury, including TBI, stroke and spinal cord injury, clinical trials have failed to demonstrate efficacy.
- Inhibition of Let 7i in vivo has now been demonstrated to enhance the efficacy of progesterone therapy via BDNF upregulation.
- Data suggests that inhibition of Let-7i after a brain injury may expand the beneficial therapeutic window for existing treatments.
- Potential benefits reach beyond the protective effects of progesterone therapy to enhancement of other neuroprotective strategies involving BDNF upregulation.

“In vivo studies reveal that inhibition of miRNA Let-7i may enhance the neuroprotective efficacy of progesterone and other agents in brain injury patients via upregulation of brain-derived neurotrophic factor (BDNF)”

Intellectual Property: Patent Pending
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