

Technology Opportunity Bulletin

Neuroprotective Agent for the Treatment of Ischemic Stroke

Tech ID: 2007-064

Description:

Researchers at the Centre for Addiction and Mental Health have developed a novel neuroprotective peptide agent capable of reducing the amount of ischemic brain injury. This is accomplished by disrupting a unique extracellular interaction between the AMPA receptor (AMPA) and the enzyme, GAPDH. Our agent disrupts this AMPAR-GAPDH interaction resulting in cell survival and preservation of brain tissue, while maintaining “normal” physiological cellular neurotransmission. This is in contrast to past AMPA receptor antagonists that directly blocked ligand (i.e. glutamate) binding and thus inhibited both physiological and pathological AMPAR functions.

Our studies have shown that our agent is neuroprotective in both the global and focal ischemia rat models (i.e. MCAO model). We are currently investigating our agent’s ability to maintain “normal” physiological neurotransmission after the ischemic episode.

Advantage:

We postulate that maintenance of normal brain neurotransmission is necessary for better functional recovery from ischemic brain injury where unaffected tissues will need to compensate for lost regions of brain tissue. In essence, brain plasticity is maintained with our agent.

Previous neuroprotective AMPAR ligand antagonists indiscriminately blocked the maintenance of normal brain function and thus did not permit compensation to occur. The critical importance of maintaining brain plasticity is supported by data from others showing that early behavioral training, soon after ischemic brain injury, is more effective in restoring motor function, than later training showing that early brain plasticity after injury is critical for functional recovery. We postulate that the lack of brain plasticity may be partly to blame for clinical trial failures of past AMPAR antagonists since clinical trials mainly measure functional recovery.

Applications:

- Treatment for ischemic stroke and other AMPAR-mediated CNS disorders.

Status of Development:

A patent application has been filed (PCT WO/2006/116874A1). Significant funding has been received to further develop the technology. Current experiments include additional focal ischemic animal studies investigating therapeutic window and dose range. PARTEQ is seeking an exclusive qualified licensee or collaborative development partner.

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