

James & Esther King Biomedical Research Program

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*Biomedical Science
Florida Atlantic University*

*2009 Program
Florida Research Challenge
(2-year project)*

Project Title: G-CSF, DETC-MeSO and Sulindac as Multi-drug Combination Therapy for TBI and Stroke Treatment

Project Summary: It is known that cigarette smoke greatly increases the risk of stroke, and stroke-induced brain injury is largely due to excessive glutamate excitation known as excitotoxicity. No effective therapeutic intervention for stroke has been developed yet. Recently we have shown that granulocyte colony-stimulating factor (G-CSF), an FDA approved drug, is effective in restoring the brain function in Parkinson's disease and stroke. In addition, we also found two additional drugs, DETC-MeSO and sulindac, which protect the brain via different mechanisms. DETC-MeSO is a glutamate receptor partial antagonist and is an active metabolite of disulfiram, a widely used drug for treatment of alcoholism. Sulindac is also an FDA-approved drug as an anti-inflammatory agent, and is a catalytic antioxidant. Based on these findings, we propose to use a three-pronged approach by combining G-CSF, a stem cell enhancer and facilitator; DETC-MeSO, a glutamate receptor partial antagonist; and sulindac, a potent antioxidant, representing three different classes of drugs as a multi-drug combination therapy for stroke. Information obtained from the proposed studies may provide an effective and novel multi-drug treatment for stroke.