CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
S1701

Project Title
The Neurological Effect of Ginkgo biloba on the Mouse Hippocampus

Abstract

Objectives/Goals
Pharmaceutical companies have marketed Ginkgo biloba leaf extracts as a memory and concentration enhancer as well as a treatment for Alzheimer's disease and dementia patients. However, there have been numerous studies with varying results about the benefits of G. biloba. My objective was to determine whether G. biloba affects synaptic plasticity via cytoskeletal protein concentrations.

Methods/Materials
Full mouse brain homogenates were treated with different concentrations of a flavone glycoside supplement. The samples' concentrations of cytoskeletal proteins actin and spectrin were found by Western blotting. Acute hippocampal slices were treated in varying amounts of the supplement, and spectrin concentrations were determined via Western blotting. The actin concentration of G. biloba-treated hippocampal neuron cultures was determined via immunostaining.

Results
The results of the full brain homogenate and the acute hippocampal slices Western blots did not show any statistically significant increase or decrease in actin or spectrin concentrations. Similarly, the actin concentration levels in the hippocampal neuron cultures remained constant.

Conclusions/Discussion
Spectrin degradation and actin polymerization have been implicated in dendritic spine changes associated with long-term potentiation. The uniform concentrations of the cytoskeletal proteins in this project indicate that G. biloba extracts do not enhance synaptic plasticity.

Summary Statement
My project determines the effect of Ginkgo biloba on synaptic plasticity via cytoskeletal proteins.

Help Received
Used lab equipment at the University of Southern California with mentoring by Professor Michel Baudry and Homera Zadran.