CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
Claribel Sanchez

Project Number
S1429

Project Title
Antagonism of Ethanol's Effects on Glycine Receptors Expressed in Xenopus oocytes by Increased Atmospheric Pressure

Abstract

Objectives/Goals
Ethanol is the number one drug abused in the United States today, the effects it has on people are understood. However, it is uncertain exactly how and where ethanol binds to have this effect. My objective is to find the exact binding site on this ligand-gated ion channel using pressure as an ethanol antagonist.

Methods/Materials
Oocytes expressing glycine receptors were clamped at #70mV and tested with EC2 concentrations of glycine in the absense and presence of 10-200mM ethanol at control and experimental atmospheric conditions.

Results
Pressure is a direct antagonist to ethanol#s enhancement of glycine receptor activation in higher concentrations (40- 200 mM) of ethanol but not that of the lower concentrations(10-25 mM) of ethanol.

Conclusions/Discussion
Pressure can thus be used as a direct ethanol antagonist in higher concentrations. The lack of antagonism in the lower concentrations of ethanol suggests that ethanol has two binding sites within the glycine receptor.

Summary Statement
My project is about trying to find the exact binding site of ethanol in ligand gated ion channels using increased atmospheric pressure as an ethanol antagonist.

Help Received
I used lab equipment at USC under the supervision of Dr. Daryl L. Davies, the principle investigator, and Dan Crawford, my grad-student mentor.