



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) Sydney S. Gamble	Project Number 35617
Project Title Ebola: Treating the Terror of Our Time	
Abstract Objectives/Goals The objective of this experiment was to determine if a treatment for the Ebola virus could be derived from a common over the counter enzyme. Methods/Materials The Ebola virus triggers a dramatic overproduction of glycoprotein. Oyster mushrooms (<i>Pleurotus ostreatus</i>) were determined to be very high in glycoprotein and therefore used to emulate the effects of the Ebola virus on the human body. Enzymes were also identified by the scientist as a means to break down proteins. Thus, the Alpha-galactosidase enzyme (an over the counter anti-indigestion remedy) was administered to ten oyster mushroom solution beakers (or test subjects). Four intervals of enzyme dosing (900GaIU each) at 12-hour increments were applied across a 48 hour period. Glycoprotein levels were measured using protein test strips before and after each dosing interval. A control test was also conducted as well as testing for the denaturation variable (unintended protein reduction due to outside stress such as heat/blending). Results The glycoprotein content in the mushroom solution beakers where the Alpha-galactosidase enzyme was administered decreased dramatically signifying the eradication of harmful glycoprotein levels as manifested by the Ebola virus. The most notable decline was after the first dosing interval where the glycoprotein content across all ten beakers dropped from an average start reading of 217.5mg/dL units to an average of 39.3mg/dL units or an 81.9% decrease. After all four dosing intervals, the glycoprotein content declined to an average of 8.5mg/dL units across all beakers. In total, 96.2% of the original glycoprotein content was eradicated. Conversely, glycoprotein in the control test where no enzyme was administered remained high, averaging 203.7mg/dL units across the same 48 hour testing period. Conclusions/Discussion The Alpha-galactosidase enzyme therapy proved extremely effective in reducing harmful glycoprotein content levels in the mushroom solution beakers by 96.2%. The greatest reduction rate of 81.9% was after the first interval or dosage, indicating the proposed enzyme treatment would be most effective in the early stages of infection.	
Summary Statement The focus of this project was to determine if the Alpha-galactosidase enzyme is an effective treatment for the Ebola virus, as such a breakthrough could contribute to the prevention of an Ebola pandemic.	
Help Received Obtained supplies from school (balance scale and beakers).	