CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)

Haley L. Brooks

Project Number

J1703

Project Title

The Effect of Heteractis magnifica on the Cell Viability of Multicentric Canine Lymphoma

Abstract

Objectives/Goals

In this study, cytotoxicity induced by Heteractis magnifica venom was investigated using a hemocytometer and a trypan blue solution to determine malignant canine lymphoid CLL-1390 cell viability.

Methods/Materials

Heteractis magnifica
8 mL of Canine Lymphoma cells
Hemocytometer
0.4% solution of trypan blue in buffered isotonic salt solution
Suspended 6 mL of CLL-1390 cells on 12 mL of Heteractis magnifica venom to understand its effect on the cell viability.

Results

The results of the petri-dishes with the addition of Heteractis magnifica venom ranged from 10.16% to 15.5%, a significant decrease from the 79.9% viability rate of the dish in which the venom was not introduced. The first dish (#1) had a 15.5% viability. The second dish (#2) had a 12.8% viability. The third dish (#3) had a 10.16% viability. The average was calculated to be 12.82%.

Conclusions/Discussion

The overall aim of this study was to determine if Heteractis magnifica venom affects the cell viability of multicentric canine lymphoma. According to the data collected, the hypothesis, if the Heteractis Magnifica venom is introduced to the multicentric canine lymphoma cells, then multicentric canine lymphoma cell viability will be significantly reduced, appears to be supported. As suggested by the evidence, the venom showed a significant reduction of cell viability.

Additional studies may confront complications with the expression of Bcl-2 proteins, anti-apoptotic proteins, that challenge therapeutic capabilities and inhibit apoptosis. Fortunately, in this study the cytolytic compounds surpassed the inhibitory protein. Other studies may also confront the dilemma, that the venom is saturated in water.

To yield more accurate and error free results in the future an automated cell counter would be used. If the experiment were to be repeated, WST-1 assays would be utilized to determine exact cytotoxicity levels. The next step would likely be to identify the bioactive traits in which the actinoporins possess, and formulate an appropriate therapeutic. Future studies should include the investigation of the venom#s safety, efficiency, and tolerance doses. Future studies should also utilize human cells in replace of canine

Summary Statement

I proposed and tested an effective method of treating multicentric canine lymphoma.

Help Received

I acquired the lymphoma cells from Peter F. Moore, Professor of Pathology at UC Davis. Also consulted with Dr. Kent, Dr. Aboulafia, Dr. Kelber, Dr. Feldman, Dr. Stan Kunin, Dr. Sue Downing, and Kristy Harmon via email regarding particular questions I had.