Determining the Impact of Hericium erinaceus on Aggression in Socially Isolated Drosophila melanogaster

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Over the past several years, aggressive behaviors have increased due to a number of issues, including social isolation, which was especially prevalent during the COVID-19 pandemic. Countering social isolation-induced aggression through natural remedies may offer a more advantageous and cost-effective solution compared to expensive pharmaceutical medications, a multitude of which often result in adverse side effects. Mushrooms have an abundance of untapped potential within the medical field. Many possess properties that can support the treatment of ailments such as cancer, diabetes, depression, or neurodegenerative diseases. Hericium erinaceus, or lion's mane, is one such mushroom, with beneficial properties including antioxidative, antidiabetic, anticancer, and antidepressant effects. In this study, Drosophila melanogaster, the common fruit fly, was socially isolated and then treated with an extract of H. erinaceus. The optimal dose of H. erinaceus extract was evaluated with a toxicity assay, and the efficiency of the extract in decreasing aggressive behaviors was quantified through an aggression assay, where male flies were fought against each other in an arena. Recorded videos of the fights were then analyzed and the low-level and high-level aggressive behaviors were quantified. A Kruskal-Wallis test and then a Dunn post-test was used to analyze the data. The results suggest that H. erinaceus has some effect on aggressive behaviors caused by social isolation, however, this difference was not found to be statistically significant. Further research could employ more trials for greater accuracy and examine the effect of H. erinaceus on aggression resulting from inherited or developed disorders.

Awards Won:

Central Intelligence Agency: First Award: $1000 award