

OFFICIAL ABSTRACT and CERTIFICATION

Using Antioxidants to Remediate Oxidative Stress, Motility, Fertility, and ASH Neuronal Death in a Huntington's Model of C. elegans

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According to the Huntington's Disease Society of America (HDSA), in 2018, there were 200,000 Americans at risk of inheriting Huntington's Disease. HD is distinguished by the progressive deterioration of nerve cells in the brain. Ginkgo Biloba, Epigallocatechin gallate (EGCG), and Salidroside are all antioxidants that possess neuroprotective properties and anti-oxidation properties. Based off Cao et al, it was hypothesized that 50µM and 150µM Salidroside, 100µg and 200µg Ginkgo Biloba, and 1.0µg and 5.0µg EGCG would increase motility, decrease ROS production and neuronal death in a Huntington's model of C.elegans. The worms received stimulation over a four day period from a platinum worm pick and the number of body bends was uploaded to Image J for quantification. For the chemotaxis assay worms were centrifuged and pipetted into the center of a four quadrant petri dish with NaCl as an attractant. For the oxidative stress assay the C.elegans were exposed to Hydrogen Peroxide (H2O2) for 24 hours after pre-exposure to antioxidants. On Days 1,3,5 the HA759 worms were photographed and uploaded to Image J for CTCF. A one-way ANOVA followed by a post-hoc Scheffe test (p<0.05) was performed. The average number of body bends for the HA759 was 17.4 body bends, while the 150 µM salidroside exhibited the highest average of 35 body bends. In the chemotaxis assay the 50µM salidroside showed a much higher attractance of 0.1 while HA659 had -0.54 attractance. It could be postulated that the antioxidants remediated the effects of the HD strains using neuroprotective properties.

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