The Effects of Four Plant Antioxidants on the Lifespan of Caenorhabditis elegans

Stoff, Summer

The objective of the project was to determine whether or not the antioxidants of super fruits acai, blueberries, pomegranates, and Chinese medicinal herb, astragalus were powerful enough reducing agents to reduce the oxidative effects of oxygen to affect the lifespan of Caenorhabditis elegans. Before conducting this project, research of antioxidants led to the formation of the hypothesis that when antioxidants are ingested throughout their lives, C. elegans will have extended lifespans due to the reduction of oxidative stress on their bodies. This experiment was conducted using static dilutions of the respective plant concentrations and placing it in the individual worm's environment directly over their food, OP50 E. coli, ensuring the ingestion of the antioxidant containing plant dilutions tested on ten worms for each plant including a control exposed to no antioxidants and conducting two trials. As a result, it was found in some cases following ingesting the antioxidants, the worm's lives were more than doubled from their standard two to three week lifespan. As an overall effect it was discovered that antioxidants had a positive effect on the organism, possibly specifically reducing the stresses on telomeres which are the ends of chromosomes responsible for the natural length of life, leading to an extension of life Caenorhabditis elegans due to the presence of specific antioxidative enzymes that reduce metabolic activities leading to aging and inhibiting telomere-degrading proteins allowing for the worms' telomeres to be protected allowing life to continue.