The Physiological Effects of Turmeric and Ginger on Oxidative Stress in C. elegans

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Oxidative stress results from an imbalance between free radicals and antioxidants in human bodies. Free radicals may begin to damage human fatty tissue, DNA, and proteins, which can cause neurodegenerative and cardiovascular diseases, cell death, reduced cell longevity, and cancer. It was hypothesized that treatment with turmeric and ginger through dietary supplements would result in longer lifespan and delayed aging in Caenorhabditis elegans. C. elegans are an excellent model organism to study various diseases relevant to humans because they are eukaryotic, providing many similarities between themselves and more complex organisms. For the control group, one plate of wild-type C. elegans strain was cultured in a 90-mm NGM petri dish containing nematode growth agar with Escherichia coli as the feeder host. Three more plates of C. elegans used turmeric, ginger, and turmeric with ginger tablets dissolved in distilled water, respectively, to test on C. elegans. For determining lifespan, worms were transferred to 60-mm NGM plates in the presence of Coenzyme Q10. For aging, the frequency of body bends were measured by microscopy. The lowest levels of oxidative stress were present in the turmeric and ginger dietary supplementation. The turmeric and ginger group's mean adult C. elegans lifespan showed a 40.7% increase compared to the control group. The turmeric and ginger culture group had the highest frequencies at all checkpoints. Ultimately, the hypothesis was supported. The amount of oxidized protein was significantly lower in treated worms than untreated worms, and activity was increased in C. elegans following turmeric and ginger treatment.

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