The Effect of Caloric Restriction on Longevity

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As chronic illness rates increase exponentially, it is important to understand the various ways nutrition can impact an individual's health and life span. The purpose of this experiment is to determine to what extent various levels of caloric restriction impact the longevity of Drosophila melanogaster. The hypothesis is that Group 2, with a 20% caloric reduction, would experience the greatest amount of longevity. Four levels of caloric restriction were tested by diluting the food medium of D. melanogaster, Group 1 with a 0% reduction (control), Group 2 with a 20% reduction, Group 3 with a 40% reduction, and Group 4 with a 60% caloric reduction. Once the flies were cultured, anetheticized, and sorted by sex, 10 flies were placed in each vial, with each group containing 3 vials, or trials (1A, 1B, and 1C). Every 24 hours the number of living flies were counted and recorded until no living flies remained. Group 2 experienced the greatest average lifespan, with 11.43 days, and Groups 1, 3, and 4 decreased accordingly. The hypothesis was accepted due to Group 2 experiencing the longest average lifespan of 11.43 days, and a 50.09% increase in average lifespan compared to the control. Statistical analysis showed a P-Value of 0 between Group 2 and the control, supporting a significant difference between the average lifespans. This supports that a moderate, 20% caloric restriction in diet can result in longer relative life and health span, and could, in effect, change what we view as effective nutrition.

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