Flies on the Fly: A Novel Research on Thiamine as a Preventative Measure to Traumatic-Brain-Injury-Induced Locomotive Ability Loss

Chang, Claire (School: New Horizons Governor's School for Science and Technology)
Chang, Olivia (School: New Horizons Governor's School for Science and Technology)

The current study aims to test if thiamine is an effective preventative measure for traumatic-brain-injury-induced locomotive ability loss. Traumatic brain injury (TBI) is an epidemic that inflicts mild to severe injuries, and even death, on millions of patients annually, invoking symptoms such as confusion, cognitive and sensory deficits, and locomotive ability loss. However, an effective treatment for TBI has not been developed yet. As the modern approach to TBI focuses on combination therapies, thiamine, a nutrient supplement not yet employed nor tested with a Drosophila model in the context of TBI, was experimented to broaden the treatments available. The null hypothesis stated thiamine would have no effect in treating TBI-induced locomotive ability loss, while the alternative hypothesis stated thiamine would have a positive effect in preventing the loss. First, the D. melanogaster specimens were split into 5 groups: two of HIT, thiamine; not HIT, thiamine; HIT, no-thiamine; and not HIT, no-thiamine. Then, all groups of flies were given food media, with the treated groups receiving media with thiamine (100mg/10mL). After 24 hours, the HIT specimens were inflicted with mild to moderate TBI through a HIT (High Impact Trauma) device. All groups then underwent a forced climbing assay and had their MI24 indexes recorded. The results, determined through a Two-way ANOVA with a Tukey’s multiple comparisons test and comparison of 100% stacked column graphs, concluded that groups with thiamine treatment maintained greater locomotive ability ($p<0.0001$) and lived longer, supporting that thiamine is an effective preventative treatment for TBI.

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