The Effects of the Modulation by Melatonin on the Pathogenesis of Systemic Lupus Erythematosus on Drosophila melanogaster

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There is a need for a cost-effective, safe, and accessible treatment for lupus. At least five million people around the world suffer from this disease. Systemic lupus erythematosus is a chronic autoimmune disease in which one's own tissue attacks itself. It can affect numerous areas of one's body and could even cause death. The effects of melatonin, a hormone that regulates the circadian rhythm, on immunity are known; however, its interactions with autoimmune disorders remains obscure. In this experiment, three melatonin supplementations- direct melatonin, indirect melatonin as pistachios, and Serotonin N-acetyltransferase (NAT)- were fed to previously synchronized Drosophila melanogaster populations. The lupus indexes (IgG antinuclear antibodies, Interleukin 6, and cortisol) were used to assay for the effectiveness of the melatonin supplementations. The hypothesis was that the NAT variable will have the lowest lupus index levels. After conducting the experiment, the averages of the variables were analyzed, and it was found that the NAT variable had the lowest lupus index and highest melatonin levels, thus exemplifying that melatonin and the lupus indexes are inversely proportional. Furthermore, an ANOVA Statistics was tested along with Tukey's HSD follow-up, which supported the hypothesis. The direct melatonin was the second most effective variable, including the positive control; consequently, both of these supplementations could be considered viable treatments. Even though there are medications that can help treat lupus, they have limitations. These include the fact that melatonin is an economical alternative that is more attainable. Additionally, they have fewer side effects and do not cause addiction.

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