The Relationship between Artificial Sugars and Increased Lipid Levels

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Commonly consumed and sought after artificial sweeteners may have more detriments than benefits when it comes to weight control. Most people receive at least 15% of their total food intake from both artificial and natural sweeteners, which is beyond the FDA recommended 10% level. Would public health decline if all such sweeteners were artificial? Drosophila melanogaster provides a link between artificial sweeteners and increased lipid levels similar to natural sugars. D. melanogaster consumed four different sweeteners: two natural (sucrose and glucose) and two artificial (sucralose and aspartame) at four concentrations (0%, 5%, 10%, 15%) mixed into their normal laboratory media from egg to one week after eclosion. Thirty female flies from each concentration of each sweetener were subjected to a total body lipid analysis. Results showed that flies consuming glucose, sucrose, and sucralose had a significant rise in lipid levels for each consecutive concentration and flies consuming aspartame had an increase until 10%, then decreased to approximately the 5% level. Overall, the data shows that artificial sweeteners cause a significant rise in lipid levels at all concentrations when compared to 0%, similar to natural sweeteners. Further investigation is needed to determine the mechanism for the significant rise in body lipids. Possible mechanisms include consuming additional food to satisfy caloric needs due to the non-nutritive nature of an artificial sweetener or interference with normal metabolic function.

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