Inconsistent and Consistent Diets Related to Weight Gain Using Fruit Flies (Drosophila melanogaster) as a Model Organism

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Obesity and overweight are part of an increasing global epidemic that affects millions of people around the world in many different areas. In 2022, the World Health Organization estimated that 2.5 billion adults were overweight. Of these, 890 million were living with obesity. Overweight and obesity are caused by many factors, including eating patterns, lack of sleep or physical activity, family history, and genetics, as well as some medicines, but the main one is eating patterns. This comparative study aimed to assess the impact of inconsistent diets compared to consistent diets in D. melanogaster. There will be four groups of D. melanogaster (each consisting of four test tubes with 40-50 D. melanogaster) based on their diet: inconsistent diet, high-sugar diet, high-fat diet, inconsistent diet with Resveratrol, and inconsistent diet with Pterostilbene. A study found that Resveratrol and Pterostilbene have anti-diabetic properties and can reverse weight gain and glucose levels associated with insulin resistance. For the diets of D. melanogaster, 20 mL of water was mixed into 20 mL of Instant Drosophila Medium. For the high-sugar diet, 7.44 g of sucrose was added; for the high-fat diet, 3.4g of coconut oil was added; for the high-sodium diet, for the diets with the micronutrients, 333μL of Resveratrol and 333μL Pterostilbene. Their survival rate was measured for the nine days and on the ninth, the mass of the D. melanogaster was measured. The high sugar and control diet had the highest survival rate while the fat had the lowest survival rate. The Incosient diet had the highest weight gain while the high sucrose diet had the lowest weight gain. Flies that were fed the high sucrose diet had significantly less weight gain than the flies fed the micronutrients.

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