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Title:	Understanding the defects associated with High Sugar Diet in the midgut of Drosophila
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Abstract:	Diet is one of the most important factors in the maintenance of an individual's good health. Altered food habit that includes excessive consumption of carbohydrate-rich diets, has contributed significantly to the global rise of patients with diet-induced diabetes. Considering the alarming effects of diet-induced diabetes on human health and physiology, it has become imperative to understand the molecular basis of the defects in order to design therapeutic strategies. The genetically amenable model organism, Drosophila melanogaster, has come up as a wonderful model organism for this study, primarily because of significant conservation of genes and signaling pathways between Drosophila and mammals. In this study, we tried to analyze the effects of high sugar diet on the midgut of Drosophila by rearing them on high sugar diet (1M), as opposed to rearing them on diet with normal sugar (0.1M). Our results show that with an increase in the number of days, flies reared on high sugar diet demonstrate a gradual reduction in the size of the midgut cells, with a concomitant increase in cell death and a decrease in the rate of cell proliferation as compared to normal feeding flies. We also studied the impact of high sugar diet on the carbohydrate metabolic pathways. We saw changes in the transcript levels of carbohydrate metabolic pathway enzymes. We looked into the transcript level of the glycolytic enzyme, Hexokinase, and Phosphofructokinase. The transcript level of Hexokinase decreases while there was no significant change in the transcript level of Phosphofructokinase.
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