Title:	Role of Fatty Acid β- OXidation in Changing The Epigentic Landscape of Adipocytes in Female Drosophila Under High Sugar Diet Conditions
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Abstract:	Dietary changes significantly impact a person's health as consumption of high dietary sugar/fat serves as a significant risk factor for several metabolic diseases, including dia- betes, obesity, and cardiovascular diseases. We are examining the effects of a high-sugar diet on the fat cells of adult female Drosophila melanogaster. The experimental design cho- sen for this investigation is based on recent studies that used fruit flies to create a model of high-sugar diet-induced illness. Earlier laboratory findings have demonstrated that the fat cells become insulin resistant under high dietary sugar and have reduced glycolytic flux. They rely on increased fatty acid beta-oxidation (FAO) for energy. This work aims to deter- mine whether elevated levels of FAO impact the acetylation status of histones in the fat cells of flies fed on high dietary sugar. Our findings demonstrate increased H3K9 and H3K18 acetylation in the fat cells when the flies are fed with HSD. However, levels of H3K27 and Pan H4 acetylation in the fat cells of high-sugar diet flies are comparable to that observed in the fat cells of flies reared on a normal diet. Genetic downregulation of FAO under HSD conditions restores the elevated levels of H3K9 acetylation. Together our results lay the foundation to determine the changes in gene expression in the fat cells due to epigenetic modifications induced by high dietary sugar.
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