

Abstract

Diet of an organism has a great influence on its health and homeostasis. Considering that diabetes and related metabolic disorders are growing health problems worldwide, we are trying to understand the effects of High Sugar Diet on intestine using the model organism *Drosophila melanogaster*. In this study, we fed flies on high sugar diet (1M-sugar) sugar to provide a condition that resembles hyperglycemia. Our results demonstrate the effect of high sugar diet in the gut morphology, cell size, cell death, and some signalling pathways that are critical for maintaining gut homeostasis -We conducted parallel experiments to study the impact of HSD on gut commensal bacteria and observed a significant decrease in the number of gut commensal bacteria in the gut of high sugar diet fed flies. This had a natural consequence on the expression of genes involved in immune pathways.