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Title:	Studying Retinal Regeneration in Type 2 Diabetes Mellitus Zebrafish Model, Developed Through Overfeeding
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Abstract:	<p>Tissue regeneration provides a way for restoring function to damaged and diseased tissues and organs 1 . Even though, mammals show very limited amount of regeneration capabilities in organs like skin, liver and skeletal muscles, they are unable to repair the damages caused in vital body parts and the Central Nervous System (CNS), especially retina, which is one of the most accessible part of CNS 1 . Irreparable tissue damages especially, in retina, heart, kidney, skin etc. are one of the major complications seen in Type 2 Diabetes Mellitus (T2DM) patients. The rising prevalence of T2DM and its complications worldwide, makes it one of the key research fields of the next decades. The Zebrafish is considered as one of the best model organism to study regeneration as well as metabolic diseases like diabetes. Here, we are focusing on the major changes in the regenerative abilities of the Zebrafish caused due to the introduction of Type 2 Diabetes mellitus (T2DM). In this study, we developed T2DM model Zebrafishes by over feeding method. After developing a T2DM zebrafish model, we explored the areas of tissue regeneration by amputation of fin, skin and retinal injury. Our studies were mainly focused on the changes in retinal regeneration. We have shown that, overfeeding zebrafish from larval stage could cause obesity and weight gain along with persistent Hyperglycemia. We found that the retinal regeneration, as well as the fin regeneration and wound healing capabilities in T2DM adult zebrafish were impaired when compared with non-diabetic control group. We checked expression patterns of various regeneration associated genes like Insm1a, Dkk1, Her4.1, Mycb, Mmp9 and Zic2b. Later study on high-sugar diet fishes showed acute hyperglycemia, which also showed impaired fin and retinal regeneration. These results suggest that increase in blood glucose levels in zebrafish body can cause damage to processes like regeneration and wound healing.</p>
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