Effects of SGLT2 Inhibition on Diabetic Retinopathy

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Background and Hypothesis:

Diabetic retinopathy (DR), a microvascular complication of diabetes, is the leading cause of blindness in the working-age population, and its prevalence is increasing. New treatment modalities must be developed to slow the progression of DR. SGLT2 inhibition has shown promise in treating other diabetic complications; however, its effect on DR remains unknown, therefore, for this study, we hypothesize that SGLT2 inhibition will reduce the harmful effects of DR.

Methods:

Diabetic (db/db) mice were fed 10 mg/kg of the SGLT2 inhibitor dapagliflozin in their diet for 6 months, non-diabetic (db/m) mice on a regular diet served as controls. In parallel, human retinal endothelial cells (HREC) were used as *in-vitro* models and treated with dapagliflozin to assess glucose uptake via a 2-(N-(7-Nitrobenz-2-oxa-1,3-diazol-4-yl)Amino)-2-Deoxyglucose (2-NBDG) assay.

Results:

Our studies show that db/db mice with dapagliflozin had significantly fewer acellular capillaries compared to untreated db/db mice. Furthermore, Dapagliflozin treatment at 1 and 10 μM concentrations of dapagliflozin yielded a significant decrease in glucose uptake compared to respective vehicle controls.

Conclusion:

Our study shows that SGLT2 inhibition has a promise in treating DR by reducing acellular capillaries and retinal glucose transport suggesting the potential of dapagliflozin treatment in DR.