RESEARCH PROGRESS REPORT SUMMARY

Grant 02696: Efficacy and Safety of Netarsudil for Canine Corneal Endothelial Dystrophy

Principal Investigator: Sara Thomasy, DVM, PhD

Research Institution: University of California, Davis

Grant Amount: $116,640

Start Date: 2/1/2020 **End Date:** 1/31/2022

Progress Report: Mid-Year 2

Report Due: 7/31/2021 **Report Received:** 7/23/2021

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Original Project Description:

The corneal endothelium is primarily responsible for maintenance of corneal dehydration and transparency, which is critical for normal vision. Corneal endothelial dystrophy (CED) is a late-onset disease in dogs whereby the endothelial cells prematurely degenerate resulting in progressive corneal swelling, vison loss and ocular pain due to corneal ulceration. Secondary corneal infection and perforation can occur necessitating eye removal. Currently, the only definitive treatment for CED and a similar disease in human patients, termed Fuchs´ endothelial corneal dystrophy (FECD), is corneal transplantation. However, corneal transplants are rarely performed in dogs due to the risk for graft rejection, lack of appropriate donor tissue, and expense. Alternative treatments for canine CED are urgently needed. Preliminary work demonstrated that a rho-associated kinase coiled-coil containing protein kinase (ROCK) inhibitor accelerated corneal endothelial regeneration. Netarsudil 0.02% ophthalmic solution (Rhopressa®) is a topical ROCK inhibitor and norepinephrine transport inhibitor recently approved by the Food and Drug Administration (FDA) for use in patients with glaucoma. Preliminary data suggest that netarsudil accelerates corneal endothelial recovery. This study will investigate the efficacy and safety of netarsudil for the treatment of early canine CED. If successful in dogs, netarsudil findings may translate to use for treatment of FECD in human patients.

Publications: None at this time.

Presentations: None at this time.

Report to Grant Sponsor from Investigator:

The purpose of this study to determine the efficacy and safety of netarsudil 0.02% ophthalmic solution (Rhopressa ®) on the treatment of corneal endothelial dystrophy (CED) in dogs. In spite of the challenges faced during the last year with the COVID-19 pandemic still active, we have recruited 19 patients diagnosed with CED in our clinical trial "Evaluation of topical netarsudil for the treatment of corneal endothelial dystrophy (CED) in dogs". Fourteen of our patients enrolled have surpassed the 4-month timepoint, and six patients have completed the clinical trial. Our preliminary results indicate that patients receiving twice per day administration of netarsudil 0.02% tend to maintain a stable corneal thickness and corneal edema. The most common adverse reaction recorded is conjunctival hyperemia. Thus, the data obtained so far supports our hypothesis that netarsudil is a safe drug that can help to halt or delay the progression of clinical symptoms in dogs diagnosed with CED. More time is needed to finalize the study and confirm the preliminary results are obtained.