Washington University in St. Louis
Office of Technology Management

USE OF ENT-ALLOPREGNANOLONE TO TREAT GLAUCOMA

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Technology Description

Researchers from Washington University in St. Louis and colleagues have identified *ent*-allopregnanolone *(ent*-AlloP) as a potential therapeutic to treat glaucoma. Glaucoma, the leading cause of irreversible blindness, results from damage to the retinal ganglion cells (RGSs) that form the optic nerve. Increased intraocular pressure can damage RGCs and is a major risk factor for glaucoma. However, the pathogenesis underlying RGC damage by intraocular pressure elevation remains unclear. Although the damage caused by glaucoma cannot be reversed, glaucoma can be treated by lowering the intraocular pressure to slow or prevent further damage. Having additional therapeutics with new mechanisms of action to treat glaucoma would be beneficial. To help meet this need, the inventors have identified *ent*-AlloP, the enantiomeric form of allopregnanolone (AlloP), as a potential new therapeutic to treat glaucoma. They have found that both AlloP and *ent*-AlloP are neuroprotective but *ent*-AlloP acts through a different mechanism to prevent loss of RGCs caused by glaucoma. This technology provides a new therapeutic for the treatment of glaucoma.

Stage of Research

The inventors have found that AlloP and *ent*-AlloP are neuroprotective in both *ex vivo* and *in vivo* rat models of ocular hypertension but they operate through distinct mechanisms.

Applications

- Therapeutic for glaucoma

Key Advantages

- Novel therapeutic for glaucoma
- Different mechanism of action than existing therapeutics

Publications

- Ishikawa M, Yoshitomi T, Covey DF, Zorumski CF, Izumi Y. Additive neuroprotective effects of 24(S)-hydroxycholesterol and allopregnanolone in an ex vivo rat glaucoma model. Sci Rep. 2018 Aug 27;8(1):12851.
- Ishikawa M, Yoshitomi T, Covey DF, Zorumski CF, Izumi Y. TSPO activation modulates the effects of high pressure in a rat ex vivo glaucoma model. Neuropharmacology. 2016 Dec;111:142-159.
- Ishikawa M, Yoshitomi T, Zorumski CF, Izumi Y. Neurosteroids are endogenous neuroprotectants in

an ex vivo glaucoma model. Invest Ophthalmol Vis Sci. 2014 Nov 18;55(12):8531-41.

Patents

- Provisional patent application has been filed

Related Web Links

- Dr. Covey profile