

InMed Pharmaceuticals

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Cannabinol—charting new paths for glaucoma treatment

InMed Pharmaceuticals, a leader in the development of rare cannabinoid pharmaceutical drug candidates for various diseases, has a portfolio of cannabinol-based clinical and preclinical programs and is focused on advancing its preclinical glaucoma and ocular disease program via partnerships.

InMed Pharmaceuticals, a clinical stage pharmaceutical company based in Vancouver, Canada, is developing rare cannabinoid-based therapeutic drug candidates for patients who may benefit from the unique physiological effects of these compounds. Specifically, InMed is exploring the therapeutic potential in ocular disease of cannabinol (CBN), a non-psychoactive rare cannabinoid with neuroprotective, anti-inflammatory, anti-nociceptive and intraocular pressure (IOP)-reducing effects. InMed has a lead drug candidate in clinical development—INM-755, a CBN-based topical dermatological cream for the treatment of epidermolysis bullosa; a second drug candidate in preclinical development—INM-088, a CBN-based topical eye drop formulation for the treatment of glaucoma; and additional discovery programs utilizing CBN and other rare cannabinoids. This growing pipeline places InMed at the forefront of pharmaceutical companies harnessing rare cannabinoids for treating a range of disorders that are partially or wholly regulated by the endocannabinoid receptor system, as well as other systems that may be modulated by cannabinoids.

“While THC and CBD have grabbed most of the attention around the medical use of cannabinoids, our focus is on research of rare cannabinoids in various diseases as potential therapeutic candidates,” said Eric A. Adams, InMed’s CEO and President. “At InMed, we are initially focusing on the unique physiological effects of cannabinol, a compound we have shown to have distinct advantages over other cannabinoids, as well as other classes of molecules as a potential treatment for conditions such as epidermolysis bullosa and glaucoma.”

Improving glaucoma with CBN

Glaucoma is one of the leading causes of blindness in older adults, and to date there are no cures. The condition is typically treated using drugs delivered via eye drops to help decrease intraocular pressure by either reducing the amount of aqueous humor produced by the eye or by increasing the rate at which the aqueous humor is drained from the eye. Over time, however, many patients are required to rotate through different prescription options as the effectiveness of these drugs diminishes or the severity of certain systemic side effects increases.

Modulation of the endocannabinoid system has been shown to have positive effects on reduction of IOP in glaucoma, but the precise molecular mechanisms are not well understood. Cannabinoid receptor 1 (CB1R) is distributed throughout the ciliary body and

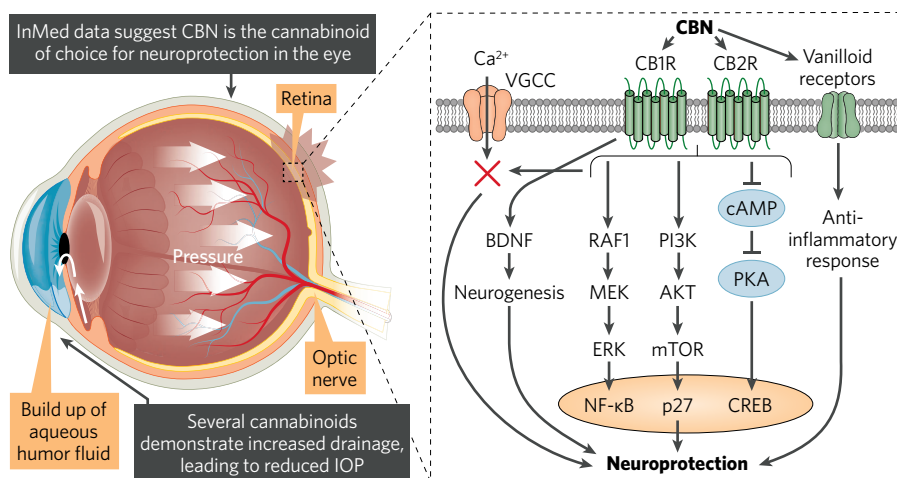


Fig. 1 | CBN-mediated modulation of the endocannabinoid system. The proposed neuroprotective mechanism of CBN includes direct and indirect modulation of CB1-, CB2- and vanilloid receptor-mediated signaling pathways, resulting in attenuated neuronal toxicity. CBN, cannabinol; IOP, intraocular pressure.

trabecular meshwork of the eye, while cannabinoid receptor 2 (CB2R) is expressed in the peripheral nervous system and immune cells. Extensive preclinical testing by InMed has demonstrated that INM-088, the company’s CBN-based topical eye drop formulation, elicits a distinct cannabinoid receptor activation. This research indicates that CBN is a potential agonist of CB1R, CB2R, vanilloid receptors and other receptors that can be found on neurons (Fig. 1). This interaction confers INM-088 with a number of potential therapeutic effects, including an ability to markedly reduce IOP and, independently, provide direct neuroprotection to the retinal ganglion cells (RGCs), which sets it apart from many current glaucoma treatments. CBN has also shown a more marked effect for neuroprotection in glaucoma models than THC (tetrahydrocannabinol) and CBD (cannabidiol), the two major cannabinoids produced by the *Cannabis* plant, as well as compared to other rare cannabinoids. Preclinical safety and toxicology studies and phase 1 clinical safety studies in dermatology conducted by InMed also indicate that CBN is safe and well-tolerated.

INM-088 represents a potentially exciting new alternative to existing glaucoma treatments. It provides an effective option for patients who cannot tolerate existing treatments or may have become resistant to them.

InMed’s INM-088 eye drop formulation utilizes a licensed proprietary microemulsion ocular penetration system to enable further preclinical and clinical

investigation for a range of ocular indications. CBN is particularly well suited for pharmaceutical development due to its chemical structure, which maintains its integrity and stability under external stresses such as heat and light. This unique feature of CBN provides a robust compound with a long shelf-life for its use in various formulations.

Partnering vision for CBN

InMed is now in the advanced phases of planning and executing the necessary IND- and CTA-enabling toxicology studies to file regulatory submissions in anticipation of first human clinical trials with INM-088 in glaucoma in 2022.

“As a leader in harnessing novel therapeutic approaches from the cannabinoid class of compounds, we are seeking partnerships to help shepherd our glaucoma program through the next stages of clinical development and commercialization,” said Adams. “Our growing portfolio of rare cannabinoid-based therapeutic candidates is targeted to bring meaningful benefit to patients.”

CONTACT

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