

## A Short Note on Diabetic Retinopathy

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### DESCRIPTION

Diabetic retinopathy is the major cause of blindness in people in their working years. Despite years of research, diabetic retinopathy therapy choices are limited and include side effects. One of the top research concerns in ophthalmology is the discovery of novel molecular entities with adequate therapeutic action for diabetic retinopathy. Based on systematic studies in animal models of inflammatory retinal diseases, including diabetic retinopathy, a retinal disease associated with vascular-neuroinflammation, this review focuses on the therapeutic effects of Cannabidiol (CBD), a non-psychoactive native cannabinoid, as an emerging and novel therapeutic modality in ophthalmology. Novel pathways are given special attention, since they may offer insight on the pharmacological activity of CBD in preclinical studies. Treatment with CBD activates the adenosine receptor and inhibits the equilibrative nucleoside transporter, resulting in a self-defense system against inflammation and neurodegeneration.

Inflammation has been identified as a critical aspect of diabetes that contributes to long-term issues in specific organs, including the eye and kidney, over the last decade. Diabetic retinopathy, a primary cause of blindness in the Western world that affects three-quarters of diabetic patients within 15 years after initiation of the disease, is a serious problem in the eye. Many diabetes individuals are only referred to an ophthalmologist for diagnosis and therapy after they have already experienced visual issues. Laser photocoagulation is the preferred treatment for diabetic retinopathy; however it also kills brain structures. As a result, there is a huge need for novel non-invasive therapies to be developed. These visual issues are almost certainly linked to oxidative stress and inflammation. The inflammatory and neurodegenerative mechanisms involved in diabetic retinopathy have been the focus of our study. We've discovered novel non-invasive receptor-based therapeutics for treating retinal degeneration caused by diabetes.

The therapeutic effects of Cannabidiol (CBD) on animal models of diabetic retinopathy are the focus of this review. Novel

processes identified in recent investigations of retinal models, which assist to explain some of the pharmacological effects observed with CBD, are given special attention. DR is a chronic ocular condition that can lead to legal blindness if left untreated. Diabetes affects over 20 million persons in the United States (roughly 10% of the overall population). Over 12 000 persons in this cohort will be diagnosed with new-onset blindness each year, making it one of the major causes of legal blindness in Americans aged 20 to 74. Although retinopathy occurs in practically all people with diabetes for 20 years or longer, it is more common in type I diabetics. Nonproliferative Diabetic Retinopathy is a term used to describe the initial stages of retinopathy (NPDR). The NPDR is classified into three categories: mild, moderate, and severe. Preclinical abnormalities such as the loss of retinal pericytes and changes in retinal blood flow are typically undetectable by physical examination.

The first changes detected by ophthalmoscopy are retinal venous dilatation and micro aneurysms. Intraretinal haemorrhage and exudation may develop as a result of these changes. These can lead to macular edema, which can lead to irreversible vision loss and blindness if left untreated. As the hyperglycemia worsens, the illness advances to moderate and severe NPDR, which is characterised by haemorrhages and venous beading, indicating dilated capillaries and reduced retinal circulation.

### CONCLUSION

The next stage of diabetic retinopathy is proliferative diabetic retinopathy (PDR), which involves the formation of new blood vessels. Within one year, about half of individuals with severe NPDR progress to PDR. The initiation of ischemia-induced new vascular growth from the optic nerve head as well as in the retina characterizes this stage. Vitreous haemorrhage occurs when these nascent vessels become brittle and bleed easily. If the neovascularization is not addressed, it will fibrosis and compress, resulting in traction retinal detachments. Nonvascular glaucoma may develop as a result of the sprouting of new vessels on the iris and in the anterior chamber's trabecular meshwork.

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