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# ABSZTRAKTKÖTET

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DOKTORANDUSZ KONFERENCIA

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**A new potential therapeutic target in inflammatory retinopathy**

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**Introduction:** Retinal inflammation may lead to visual impairment, even blindness in most severe cases. The disease is triggered by bacteria, viruses, fungi, or systemic autoimmune problems.

Pituitary adenylate cyclase activating polypeptide (PACAP) is a neuropeptide, which has strong neuroprotective and general cytoprotective effects. It can also be found in the eye and it is involved in several ocular processes. It is protective in diabetic-, ischemic retinopathies, in retinopathy of prematurity, in glaucoma, in age-related macular degeneration and in case of corneal damage. Three receptors can be distinguished, however the specific PAC1 receptor plays the key role in its well-known protective mechanisms.

**Aim:** Our aim is to investigate the effectiveness of a specific, exogenous PAC1 receptor agonist agent, maxadilan, in inflammatory retinopathy.

**Methods:** Inflammation was induced by bacterial lipopolysaccharide in rats. Maxadilan was administered by intravitreal injection. Optical coherence tomography was used to follow the changes in thickness of all retinal layers. Electroretinography provides information on the functionality of photoreceptor, bipolar and horizontal cells. Expression level of forty different types of cytokines was also analyzed.

**Results:** Our data show that maxadilan is able to prevent the decrease of all retinal layers in inflammatory retinopathy. In addition, it improves the functional outcome. The PAC1 receptor-mediated signaling pathways influence the level of several cytokines and chemokines, such as MIG, MIP2, G-CSF, KC, IL1-alpha, C5/C5a.

**Conclusions:** The specific, exogenous PAC1 receptor agonist maxadilan prevents the morphological and functional damage in inflammatory retinopathy. Based on our results PAC1 receptor is a new possible therapeutic target in this disease.

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**Keywords:** *inflammatory retinopathy, PACAP, PAC1 receptor*