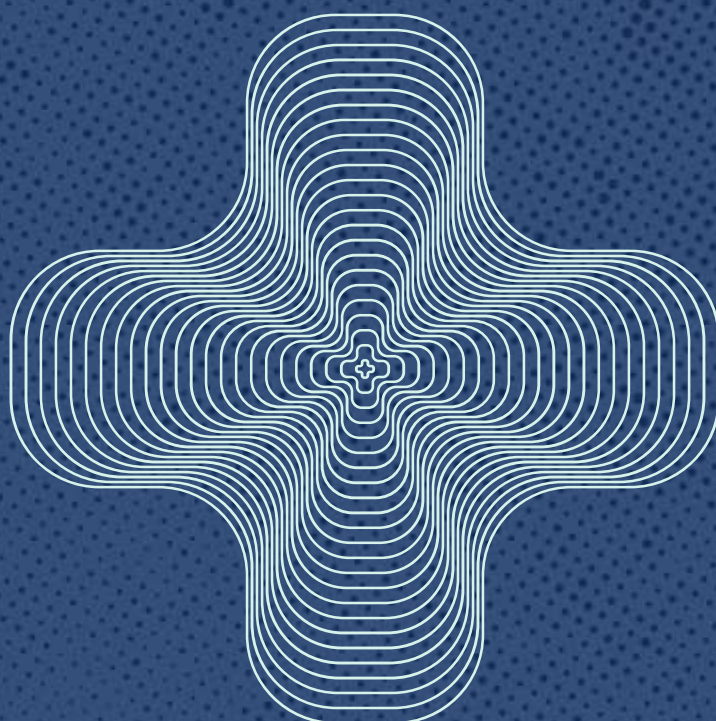




BOOK OF ABSTRACTS



**MedPECS – Medical Conference
for PhD Students and
Experts of Clinical Sciences**

20 May 2023
Szentágothai Research Centre



PÉCSI TUDOMÁNYEGYETEM
UNIVERSITY OF PÉCS



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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. 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. Three receptors can be distinguished, however the specific PAC1 receptor plays the key role in its protective mechanisms. 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 mice. Maxadilan was administered by intravitreal injection. Optical coherence tomography was used to follow the changes in thickness of all retinal layers. Change of ganglion cell number was evaluated after toluidine blue staining. Electroretinography provided functional information. Expression level of forty different types of cytokines was also analyzed.

Results: Our data show that maxadilan is able to prevent the decrease of the outer nuclear layer, outer plexiform layer, inner nuclear layer, inner plexiform layer and the photoreceptor layer. In addition, it improves the functional outcome. Significant ganglion cell degeneration was observed in inflamed group. However, ganglion cell number remained similar to control group after maxadilan treatment. Based on our results, PAC1 receptor-mediated signaling pathways significantly influence the level of several cytokines and chemokines (such as MIG, MIP2, G-CSF and 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