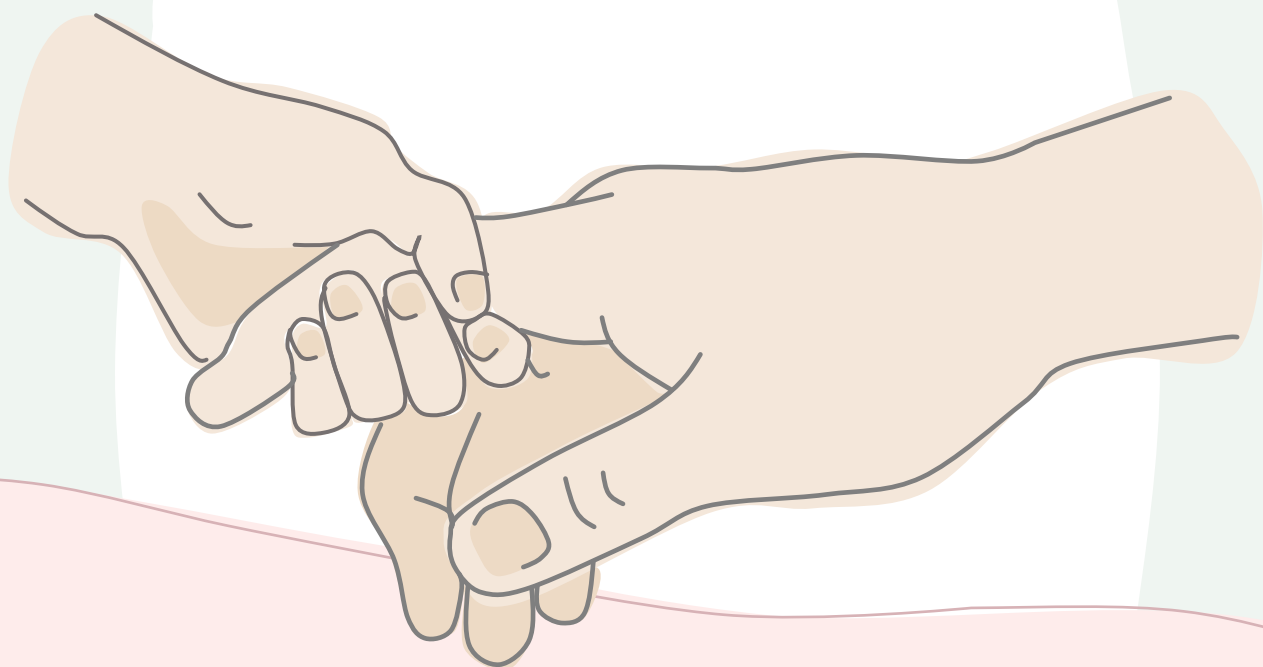


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BOOK OF ABSTRACTS

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BS01

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.

Materials and 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 toluidin 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.

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.

Keywords: inflammatory retinopathy, PACAP, PAC1 receptor

BS02

Isolation of lipid rafts before and after the myelination process in the brain of a genetically modified mouse Siat8a

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Introduction: Lipid rafts are membrane microdomains enriched in glycosphingolipids, fosfolipids, saturated long-chain fatty acids, and cholesterol. Gangliosides, sialic acid-containing glycosphingolipids, play an important role in the organization of lipid rafts. St8Sia1 knockout mice are genetically altered and lack the b-series of gangliosides. To elucidate the importance of gangliosides in lipid rafts and their effects on myelin microdomain organization, St8Sia1 mice with a gene defect in the synthesis of complex gangliosides were used for this study.

Materials and methods: Brains from St8Sia1 knockout mice (KO) of different ages were used for this study: before (at 5 days of age), during (at 15 days of age), and after completion of the myelination process (at 30 days of age). Lipid rafts were isolated by ultracentrifugation in a sucrose gradient. After isolation, lipid raft composition was determined by Western blot using antibodies for rafts and nonrafts (flotillin and transferrin) and markers for myelination (MAG, MBP). Membrane analysis was performed using Fiji software.

Results: There was a statistically significant difference in the expression of flotillin and transferrin proteins between all three age groups of mice, but they were also present in almost all fractions and not in the marker-specific fraction.

Conclusion: Isolation of lipid rafts revealed changes during brain development and differentiation in St8Sia1 KO mice.

Keywords: flotillin, lipid rafts, myelin, transferrin, St8Sia1 knockout mice