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were 0.1, 30 and 3,000 nmol/eye, respectively; $p < 0.05$). An acetic acid (1% v/v, i.p.)-induced writhing test was used to assess an analgesic potential [2]. In this test, morphine 5 mg/kg, s.c. (15 min pretreatment) inhibited writhing by 98% ($p < 0.0001$). The rank order of inhibitory potency of the vanilloids was RTX>>OLV>CAPS (ID_{50} values were <0.003, 0.14 and 12.6 μmol/kg, s.c., respectively). In the analgesia experiments, the vanilloids also induced emesis during the 60 min pretreatment time. The rank order of potency was RTX>OLV>>CAPS, with significant emesis being seen at 0.3, 30 and 300 μmol/kg, respectively ($p < 0.05$). In conclusion, the useful analgesic action of CAPS, RTX and OLV occurs at doses below those inducing emesis. However, all 3 vanilloids tested positive in the eye irritancy assay indicating some degree of pungency.

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OP-2/25

Role of Axin in Nerve Growth Factor-Stimulated Neurite Outgrowth

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Neurotrophins are neurotrophic factors that have well-established roles in neuronal survival and differentiation during development, and in the modulation of synaptic plasticity in differentiated neurons. Functions of neurotrophins are exerted through the activation of Trk receptors, and the subsequent initiation of downstream signaling cascades. Recently, molecules in the canonical Wnt signaling pathway, such as glycogen synthase kinase 3 beta (GSK3β) and adenomatous polyposis coli (APC), have been demonstrated to modulate neurotrophin-mediated neurite outgrowth. Axin is a multidomain scaffold protein required for the recruitment of APC and β-catenin to GSK3β in Wnt signaling. Given the recent implication of Wnt signaling in the modulation of neurotrophin functions, it is of interest to examine if Axin may also play a role in neurotrophin-mediated axon outgrowth. We have employed rat pheochromocytoma PC12 cells to determine the functional role of Axin in NGF-induced neuronal differentiation. We found that Axin and its interacting proteins were endogenously expressed in PC12 cells. Furthermore, specific knockdown of Axin by siRNA enhanced phosphorylation of Akt and JNK in PC12 cells. Importantly, reduction of Axin expression was accompanied by a concomitant increase in neurite extension upon treatment of PC12 cells with NGF. Our preliminary results therefore suggest a novel role of Axin in neuronal differentiation through the modulation of neurotrophin signaling.

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OP-3/25

Activation of Microglia/Macrophages Determines the Fate of Retinal Ganglion Cell Survival in Rat Chronic Ocular Hypertension Model

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Although it has been demonstrated that microglia/macrophages produce neuroprotective effects in acute injury, whether they do the same in chronic neurodegeneration such as glaucoma is largely unknown. Using a laser-induced chronic ocular hypertension (COH) model, we systematically studied the influences of microglia in RGC loss. Adult female SD rats were anesthetized with intra-peritoneal injection of a ketamine/xylazine mixture. Proparacaine hydrochloride was applied to the eyes as topical anesthetics. The limbal vein and the three radial episcleral aqueous humor drainage veins of the right eye were photocoagulated twice with a 7-day interval using an Argon laser. While a small number of microglial cells (10^3) did not produce significant influence, injection of large number of microglial cells (10^5) into the vitreous significantly increased RGC loss. Appropriate quantity (10^4) microglial cells per intraocular injection markedly reduced RGC loss in the COH model. Monocyte chemoattractant protein 1 at low concentration (10 and 100 ng), but not at high concentration (1,000 ng), provided significant neuroprotective effect on RGCs, which may attribute to the chemoattractive property on microglia/macrophages to the retina. Immunocytochemical staining on flat mounted retinas displayed high immunoreactivity for ionized calcium binding adapter molecular 1 (Iba1), indicating high number of microglia/macrophages. Potent stimulation of microglia/macrophages by lipopolysaccharide (LPS) significantly increased the death of RGCs in the COH model. Iba1-immunoreactive positive microglia/macrophages in the LPS group were activated with enlarged cell body and thickened short process. These results advance our understanding of the roles of microglia in chronic neurodegeneration. Our results can demonstrate that microglia/macrophages can be either protective or harmful depending on the stimulation in chronic neurological disorder like glaucoma.

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OP-4/25

Regulation of ACh Receptor Clustering in Muscle by SIRPα1 and Shp2

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At vertebrate neuromuscular junctions (NMJs), nerve-secreted agrin triggers muscle acetylcholine receptor (AChR) aggregation by stimulating the muscle-specific tyrosine kinase MuSK. To