Neuroinflammation

Mutations in the Complement factor I (CFI) gene have previously been identified as causes of recurrent CNS inflammation

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Cerebral autoregulation is the ability of the brain to maintain a constant blood flow despite changes in blood pressure. Dysfunction in cerebral autoregulation can occur in acute brain injury, such as traumatic brain injury or stroke, and can lead to poor outcomes. Neuroinflammation has been suggested as a potential mechanism underlying cerebral autoregulation dysfunction in these conditions.

Neuroinflammatory biomarkers

Neuroinflammatory biomarkers.

Etiology

Alcohol induced neuroinflammation.

SARS-CoV-2-mediated neuroinflammation

Neuroinflammation treatment

Microglia-related neuroinflammation is associated with a variety of neurodegenerative diseases. Flavonoids have demonstrated different pharmacological effects, such as antioxidation, neuroprotection and anti-inflammation However, the effect of flavonoid 6-methoxyflavone (6-MeOF) on microglia-mediated neuroinflammation remain unknown.

A study aimed to study the antineuroinflammatory effects of 6-MeOF in lipopolysaccharide- (LPS-) induced microglia in vitro and in vivo.

Pretreatment of BV2 microglia cells with 6-MeOF for 1 h then stimulated with LPS (100 ng/ml) for 24 h. The expression levels of pro-inflammatory factors, NO and reactive oxygen species (ROS) were performed by the enzyme-linked immunosorbent assay (ELISA), Griess assay and flow cytometry. Western blotting was used to assess MAPK, NF-κB signal transducer and antioxidant enzymes-related proteins. Analysis of ROS and microglial morphology was confirmed in the zebrafish and mice brain, respectively.

The results demonstrated that 6-MeOF dose-dependently prevent cell death and decreased the levels of pro-inflammatory mediators in LPS-stimulated BV2 microglia cells. Phosphorylated NF-κB/IκB and TLR4/MyD88/p38 MAPK/JNK proteins after exposure to 6-MeOF was suppressed in LPS-activated BV-2

microglial cells. 6-MeOF also presented antioxidant activity by reduction of NO, ROS, iNOS and COX-2 and the induction of the level of HO-1 and NQO1 expressions in LPS-activated BV2 microglial cells. Furthermore, we demonstrated that 6-MeOF inhibited LPS-induced NO generation in an experimental zebrafish model and prevent the LPS-induced microgliosis in the prefrontal cortex and substantia nigra of mice.

These results explored that 6-MeOF possesses potential as anti-inflammatory and anti-oxidant agents against microglia-associated neuroinflammatory disorders [1].

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Chen WF, Shih YH, Liu HC, Cheng CI, Chang CI, Chen CY, Lin IP, Lin MY, Lee CH. 6-methoxyflavone suppresses neuroinflammation in lipopolysaccharide- stimulated microglia through the inhibition of TLR4/MyD88/p38 MAPK/NF-κB dependent pathways and the activation of HO-1/NQO-1 signaling. Phytomedicine. 2022 Mar 1;99:154025. doi: 10.1016/j.phymed.2022.154025. Epub ahead of print. PMID: 35272244.