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T1-10

Oleoylethanolamide protects against ischemic stroke by modulating microglia M1/M2 polarization in PPARα-dependent manner

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Abstract: OBJECTIVE Oleoylethanolamide (OEA) has shown neuroprotective effect in treating acute and chronic ischemic stroke. However, it is unclear whether OEA is able to modulate microglia/macrophage polarization, which has recently been documented to be important in the pathology of ischemic stroke. This study explored the potential role of OEA in modulating the microglial phenotypes. **METHODS** *In vivo*, middle cerebral artery occlusion (MCAO) was induced in both *PPARα*$^{-/-}$ (KO) and wild-type (WT) mice. *In vitro*, primary cortical microglia or neuron or coculture from KO/WT mice was subjected to oxygen glucose deprivation (OGD). Western blotting and immunofluorescence were used for detecting the specialized protein expression of M1/M2, such as CD206 and CD16/32. qPCR was utilized to detect the signature gene change of M1/M2. **RESULTS** OEA significantly reduced neuron damage of mice after MCAO. More importantly, OEA promoted microglia/macrophage transferring from inflammatory M1 phenotype to a protective, anti-inflammatory M2 phenotype *in vivo* or *in vitro*. Interestingly, these benifical effects of OEA could not be observed in the KO mice or KO microglia. **CONCLUSION** Our results reveal a novel pharmacological effect of OEA in modulating microglia/macrophage polarization after MCAO, thus depening our understanding of neuroprotective mechanisms of OEA in treatment of ischemic stroke. Furthermore, this new mechanism may allow OEA to be used in many other microglia/macrophage polarization-related inflammatory diseases.

Key words: oleoylethanolamide; microglia/macrophage polarization; PPARα; ischemic stroke

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T1-11

损伤脑内神经血管网络重构的细胞和分子机制的研究

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摘要: 缺血性脑卒中发生后脑内的病理十分复杂,包括急性和慢性神经细胞的死亡和再生修复。已知神经血管网络重构在损伤脑修复中起关键作用。本课题组的系列研究发现,缺血损伤脑区损伤的细胞除了发生不可逆的死亡外,还存在神经元和血管的新生及星形胶质细胞增殖。有趣的是,这些血管和星形胶质细胞在神经元新生中发挥重要的调节作用。缺血损伤脑内活化的星形神经胶质细