Melatonin prevents neuroinflammation in the hippocampus of aged mice

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Abstract

Aging isaccompanied by deterioration in cognitive functions together with a variety of neurobiological changes including neuroinflammation.Low-grade chronic up-regulation of pro-inflammatory cytokines occurs during ageing. Melatonin is a keyendogenous indoleamine secreted and released by the pineal gland; it plays a critical role in the regulation of circadian rhythms. Moreover, melatonin acts as a potent free radical scavenger, anti-inflammatory and numerous other functions. In the present study we examined the neuroinflammation status in aged mice.The result showed that the level of integrin αM (CD11b), Glial fibrillary acidic protein (GFAP) and major proinflammatory cytokines significantly increased in hippocampus of 22-month aged mice compared with 2 month-old mice. In order to examine the effect of melatonin on this neuroinflammation status in aged mice, melatonin was given in the drinking water at a dose of 10 mg/kg/day, started from 16-month old for 6 months. Our results revealed that melatonin significantly attenuatedthe increase of CD11band GFAP in aged-mouse hippocampus. Moreover we found that melatonin could attenuate reduction of major proinflammatory cytokine levels in aged-mouse hippocampus.The results suggested that melatonin attenuated age-related neuroinflammation through reduction of glialactivation.

Keywords: astrocyte, brain aging, inflammatory cytokines, melatonin, microglia,

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