Effects of ethanol extract of Ocimum americanum on neuroinflammatory parameters in hippocampus from young adult and aged rats


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Abstract

Introduction: Several studies about biological activities of culinary herbs, although investigations about the effect of supplementation with herbs and spices as regards to the brain function are rare, especially on prevention of disorders related to aging. It has been described that some Lamiaceae species have activities antioxidant, cholinesterase inhibition and anti-inflammatory. Aim: Investigate the effects of chronic administration of ethanol extract of Ocimum americanum (EEOA) (family Lamiaceae) on neuroinflammatory parameters in hippocampus from young adult and aged rats.

Experimental: Wistar rats aged 3 and 18 months were fed with ad libitum the experimental diets: control diet, diet supplemented with EEOA 0.1 g/kg and 2 g/kg. After 4-week of supplementation, rats were decapitated and the hippocampi were dissected and the supernatant was used to determine the levels of TNF-α (n=4-6) and IL-1β (n=5-6). Results were expressed as percentage of control, represented as mean (±SEM) and analyzed by Two-way ANOVA followed by Tukey test, significance was assumed as p<0.05.

Results: The EEOA reduced the content of TNF-α in the hippocampus from young and aged rats (F(5,22)=4.576, p=0.005). Two-way ANOVA showed the effect of EEOA supplementation (F(2,22)=8.421, p=0.002) and an interaction between age and EEOA supplementation (F(2,22)=4.161, p=0.029). The EEOA decreased the content of IL-1β in the hippocampus from young rats (F(5,26)=11.481, p<0.0001), while, there was a trend from aged ones (p=0.087). Two-way ANOVA revealed the effect of age and EEOA supplementation (F(1,26)=15.049, p=0.001; F(2,26)=16.848, p<0.0001; respectively).

Conclusion: Our data demonstrated that chronic supplementation with EEOA was able to reduce the TNF-α levels in aged and young rats and decreased the levels of IL-1β in hippocampus from young rats, but this result was modest in aged ones. We can propose that the modulation on neuroinflammation process can be related to neuroprotective effect.

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