F-P-33

Anti-stress Effects of Ethanol Extract of *Ziziphus jujuba* Against Corticosterone-Induced Apoptosis in PC12 Cells

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The coronavirus disease 2019 (COVID-19) pandemic may be stressful for people. Public health actions, such as social distancing, can make people feel isolated and lonely and can increase stress and anxiety. As a result, there is a growing interest towards various materials to relieve stress. Thus, the present study aimed to investigate the anti-stress effects of ethanol extract of *Ziziphus jujuba* in PC12 cells treated with corticosterone and its underling mechanisms. Furthermore, the viability of the cells, the apoptosis of the cells, the level of phosphorylation of extracellular signal-regulated kinases (p-ERKs) expression were measured by MTT assay, LDH assay, Hoechst staining assay and western blotting. Our results showed that the extract of *Ziziphus jujuba* reversed corticosterone-induced damage in PC12 cells, which increased cell viability, decreased LDH release, and attenuated corticosterone-induced apoptosis as compared with the corticosterone-treated group. Therefore, these data suggest that the extract of *Ziziphus jujuba* could be a good candidate for development as a functional food supplement in the improve the anti-stress effect.

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