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Radix Scutellariae Attenuates CUMS-Induced Depressive-Like Behavior by Promoting Neurogenesis via cAMP/PKA Pathway

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Abstract

Chronic mild unpredictable stress (CUMS) causes neurogenesis damage in the hippocampus and depressive-like behaviors such as cognitive impairment. Radix Scutellariae from the dry root of Scutellaria baicalensis Georgi, with the common name Baikal skullcap. In this study, we demonstrated that Radix Scutellariae (RS 500, 1000 mg/kg) notably improved the behavior of the rat, such as shortened escape latency in morris maze test, reduced immobility time in tail suspension test and in forced swimming test, as well as increased sucrose consumption in sucrose preference test. In addition, RS alleviated the damage CUMS-induced neurogenesis and the reduced levels of BrdU; DCX and NeuN, the neurons hallmark of hippocampus neurogenesis. Moreover, associated proteins in cAMP/PKA pathway were up-regulated after RS treatment. By HPLC analysis, we found that RS decoction contains four main components, including baicalin, baicalein, wogonoside and wogonin, respectively. In conclusion, RS could exert a natural antidepressant with improving depressive-like behavior via regulation of cAMP/PKA neurogenesis pathway.

Keywords: Depression; Neurogenesis; Radix Scutellariae; cAMP/PKA.