

Title: Investigation of *Scutellaria baicalensis* for Potential Neuroprotective Effect on the Treatment of Parkinson's Disease

Author: Mohammad Zubair Baba, Gomathy Subramanian, Jagdish Chand, Firzan Nainu Umair Wahedi, Varakumar Potlapati, Koppula Jayanthi, Mohammed Azeemuddin, Talha Bin Emran

Abstract: Parkinson's disease (PD) is a progressive neurological disorder that lacks adequate treatment, and researchers have focused on rescuing or delaying neurodegeneration in PD. *Scutellaria baicalensis* has shown promising results in reducing oxidative stress and demonstrating a neuroprotective effect on PD animal models. However, the exact mechanism by which *S. baicalensis* treats PD is not yet fully understood. To investigate the potential molecular mechanisms underlying *S. baicalensis* antiparkinsonian efficacy, this study used network pharmacology. Open-source datasets were used to compile phytoconstituents, and virtual screening was conducted to identify hit phytoconstituents that target proteins involved in PD development. The drug-likeness value, ADMET analyses, and negative consequences of the phytochemical constituent were evaluated. Regulating pathways were anticipated with the Kyoto Encyclopedia of Genes (KEGG) record. 7 phytochemical constituents from *S. baicalensis* were found to alter the activity of proteins involved in PD occurrence, with 5-hydroxy-7,8-dimethoxyflavones having the highest docking result of -8.337 kcal/mol and active amino acids SER 91, as well as the drug-likeness value at the highest edge points. Through the networking of phytoconstituents, genes, and pathways, the study revealed that the neuroactive ligand-receptor interaction route was tightly synchronized.

Keywords: Parkinson's disease; Neuroactivity; Computational analysis; *Scutellaria baicalensis*; Phytoconstituents

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