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Neuroprotective properties of compound isolated from *Dianthus superbis* L.

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Dianthus superbis L. has been used in Chinese herbal medicine as a diuretic and anti-inflammatory agent. Triterpenoid saponins such as dianoside A to I are reported to be among the major bioactive compounds in *D. superbis*; compounds including dianthosaponins, dianthramide, flavonoid, coumarin, triterpenoid, pyran-type glycoside, and cyclic peptides have also been isolated from *D. superbis*. In this study, we isolated bioactive compound from *D. superbis* and evaluated neuroprotective activity against glutamate-induced cell death in the hippocampal neuronal HT22 cells. New compounds, chrysoeriol-5-methylether-7-O(2'', 6''-di-O- α -l-rhamnopyranosyl)- β -d-glucopyranoside (2) isolated by bioactivity guided separation. Structure of compound was identified on the basis of ¹H-NMR, ¹³C-NMR, and 2D NMR spectra, while neuroprotective properties were evaluated by performing the 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. We also evaluated reactive oxygen species (ROS) generation, AChE inhibition, DPPH radical and H₂O₂ scavenging activity to elucidate possible mechanism of effect. Chrysoeriol-5-methylether-7-O(2'', 6''-di-O- α -l-rhamnopyranosyl)- β -d-glucopyranoside effectively protected HT22 cells against glutamate toxicity. Additionally this compound significantly decreased the ROS level in the oxidative stress induced HT22 cells by glutamate and showed antioxidant effect (DPPH radical and H₂O₂ scavenging effect) and acetylcholinesterase inhibition. In conclusion, chrysoeriol-5-methylether-7-O(2'', 6''-di-O- α -l-rhamnopyranosyl)- β -d-glucopyranoside isolated from *D. superbis* extract exhibited neuroprotective effect via antioxidant system, inhibition ROS. Further studies may need to elucidate the possible mechanism of effect of chrysoeriol-5-methylether-7-O(2'', 6''-di-O- α -l-rhamnopyranosyl)- β -d-glucopyranoside. Overall results of study suggested that chrysoeriol-5-methylether-7-O(2'', 6''-di-O- α -l-rhamnopyranosyl)- β -d-glucopyranoside has therapeutic potential for applications in neurodegenerative diseases.