Let the Mind Bloom: Parthenocissus Quinquefolia for Hope

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Abstract:

This study is the first scientific investigation to explore the potential neuroprotective effects of a poisonous plant, Virginia creeper (Parthenocissus quinquefolia) extract on neuronal viability in neurodegenerative diseases, particularly Alzheimer's. Since neurodegenerative disorders are associated with processes such as oxidative stress, inflammation, and neuronal loss, the study aimed to determine whether this plant extract could provide protective benefits for neurons under oxidative stress conditions. In the experiment, ShSY5Y human neuronal cells were exposed to different concentrations of the Virginia creeper's extract in a cell culture laboratory setting to assess its effects on cell viability, oxidative stress suppression, and overall cellular functionality. The experimental results demonstrated a dose-dependent effect. While low concentrations of the extract did not produce significant changes in neuronal viability, higher concentrations led to improved cell survival rates. These findings suggest that the extract may contribute to reducing oxidative stress and enhancing neuronal resilience, potentially supporting cellular defense mechanisms. However, the results also indicated that the effects varied depending on dosage, emphasizing the need for precise dose optimization in future studies. As the first study to experimentally demonstrate the potential neuroprotective properties of Virginia creeper extract, this research represents a significant step in developing new therapeutic approaches for neurodegenerative diseases. Although Virginia creeper is classified as toxic for human consumption, its potential benefits in a controlled medical context highlight the necessity for further preclinical and clinical investigations. Understanding its mechanisms of action and determining safe dosage ranges could pave the way for novel treatment strategies targeting oxidative stress and neuronal loss in conditions like Alzheimer's. 1. Virginia Creeper (Parthenocissus Quinquefolia) Parthenocissus quinquefolia, commonly known as Virginia creeper, is a plant native to the North America. Some sources indicate that this plant also grows naturally in Asia (Smith, 2015). The green leaves of Parthenocissus quinquefolia turn bright red in the fall, which has GSJ: Volume 13, Issue 4, April 2025 ISSN 2320-9186 1074 GSJ© 2025 www.globalscientificjournal.com contributed to its popularity in decorative uses. It is frequently seen on rooftops, pergolas, walls, and fences (Miller, 2017). Virginia creeper (Parthenocissus quinquefolia) is rich in chemical compounds. The plant contains powerful antioxidants such as flavonoids, resveratrol, quercetin, and kaempferol (Brown & Taylor, 2018). Additionally, phenolic acids, tannins, and various minerals play an important role in the plant's chemical composition (Smith, 2015). Flavonoids, in particular, can exhibit neuroprotective effects on nerve cells. Compounds such as resveratrol are known for their anti-inflammatory properties and are thought to slow the progression of neurodegenerative diseases (Miller, 2017). Quercetin and kaempferol may support cellular energy metabolism and contribute to improving mitochondrial function (Jones, 2020). Phenolic acids and tannins are

associated with positive effects on the nervous system, and research is ongoing to explore mechanisms that strengthen communication between neurons.

Keywords:

Parthenocissus quinquefolia, Virginia creeper, neuronal viability, neurodegenerative diseases, Alzheimer.