

**Short Article**

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BIOMEDICINE 2021: Genistein by loading into transfersomes as new possible adjuvant in the oxidative stress-related neurodegenerative diseases

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Introduction

Genistein (GEN) is a soy-derived isoflavone, and its antioxidant and neuroprotective activity has been reported by several authors. Promising results have been obtained both in vitro and in vivo studies, but several drawbacks such as low oral bioavailability, poor water solubility, and rapid metabolism/excretion limit GEN's clinical applications. The aim of this study was to overcome those limitations by loading GEN in transfersomes (GEN-TF) and use

GEN-TF as a potential therapeutic or preventive strategy in neurodegenerative diseases. Several GEN-TF complexes were administered and tested on H₂O₂-induced oxidative damage in PC12 cell line by means of MTT, LDH and flow cytometer assay. All the obtained genistein carrier were able to improve GEN internalization in PC12 cells, reducing ROS and the amounts of apoptotic cells generated by H₂O₂ treatment, strengthening the neuroprotective activity of GEN. The experimental data indicate the GEN-TF2 as the most promising drug delivery system in terms of antioxidant activity and oxidative stress reduction in our PC12 cells model. These results suggest that GEN-TF2 could be used as adjuvant therapy in oxidative stress-related neurodegenerative diseases.



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