



## Protective Effects of *Angelica sinensis* Volatile Oil on Culture Cortical Cells Damaged by Glutamate

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**SUMMARY.** *Angelica sinensis* has been widely used to treat some psychosomatic illnesses, amnesia, anemia, and gynecological diseases in traditional Chinese medicine for thousands years. In this paper, we determined the protective effect of *Angelica sinensis* volatile oil (ASVO) on primary culture cortical cells damaged by glutamate. Excitotoxicity induced by glutamate caused the production of reactive oxygen species (ROS), the decrease in antioxidant enzymes levels, the decline in mitochondrial transmembrane potential (MMP), and the increase in apoptosis and necrosis. When administered either before or after the glutamate insult, ASVO could increase the cell viability significantly and could maintain the activities of antioxidant enzymes such as superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPX), all of which played important roles in the antioxidative defense mechanism. Flow cytometry analyse revealed ASVO could obviously alleviate apoptosis and necrosis induced by glutamate, the mechanism was probably involved with maintaining MMP, inhibiting Ca<sup>2+</sup> influx, and increasing the expression of bcl-2 while suppressing the expression of bax. The results of this study demonstrated that AVSO possessed the activity to prevent the neurotoxicity induced by glutamate, implying that AVSO has a potential foreground in the therapy of neuro-excitotoxicity diseases.

**KEY WORDS:** *Angelica sinensis* volatile oil, Cortical cells, Excitotoxicity, Glutamate.

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