

Neuroprotective effect of *Nigella sativa* hydro alcoholic extract on serum/glucose deprivation induced PC12 cells death

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Abstract

Introduction: The Serum/Glucose deprivation -induced cell death in cultured PC12 cells represents a useful in vitro model for the study of brain ischemia and neurodegenerative disorders. *Nigella sativa* L. has been known as a source of antioxidants. To elucidate the neuroprotective actions of *N. sativa* extract in vitro, we studied the effect of *N. sativa* extract on cultured PC12 cells under serum/glucose deprivation conditions. **Methods:** PC12 cells were cultured in DMEM medium containing 10% (v/v) fetal bovine serum, 100 units/ml penicillin, and 100 µg/ml streptomycin. Cells were seeded overnight and then deprived of serum/glucose for 6 and 18 h. Cells were pretreated with different concentrations of *N. sativa* extract (7, 11-200 µg/ml). Cell viability was quantitated by MTT assay. Intracellular ROS production was measured by flow cytometry using 2', 7'-Dichlorofluorescein diacetate (DCF-DA). **Results:** Depriving the PC12 cells of serum/glucose caused prominent cell toxicity at least after 6 and 18 h. Pretreatment of PC12 cells with *N. sativa* (7, 11-200 µg/ml) could reduce serum/glucose deprivation-induced cytotoxicity in PC12 cells after 18 h. The experimental results suggest that *N. sativa* extract protects the PC12 cells against Serum/Glucose deprivation-induced cytotoxicity. **Conclusion:** Our findings might raise a possibility of potential therapeutic application of *N. sativa* extract for preventing and treating cerebral ischemic and neurodegenerative diseases.

Reaxys Database Information

Author keywords

Nigella sativa; PC12; Serum/glucose free; Toxicity

Indexed Keywords

EMTREE drug terms: 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyltetrazolium bromide; dichlorodihydrofluorescein diacetate; glucose; *Nigella sativa* extract; penicillin G; reactive oxygen metabolite; streptomycin

EMTREE medical terms: animal cell; article; brain ischemia; cell assay; cell culture; cell death; cell strain; cell viability; culture medium; cytotoxicity; degenerative disease; drug effect; flow cytometry; in vitro study; neuroprotection; nonhuman; rat; serum

Chemicals and CAS Registry Numbers: 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyltetrazolium bromide, 298-93-1; dichlorodihydrofluorescein diacetate, 8091-99-0; glucose, 50-99-7, 84778-74-3; penicillin G, 1406-00-9, 71-23-7; streptomycin, 57-92-1

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