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# Neuroprotective Effects of Resveratrol in In vivo and In vitro Experimental Models of Parkinson's Disease a Systematic Review

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## Abstract

Parkinson's disease (PD) is currently the second most common neurodegenerative disease, being characterized by motor and non-motor symptoms. The therapeutic options available for its treatment are limited, do not slow the progression of the disease, and have serious side effects. For this reason many studies have sought to find compounds with neuroprotective properties that bring additional benefits to current therapy. In this context, resveratrol is a phenolic compound, found in many plant species, capable of crossing the blood-brain barrier and having multiple biological properties. Experimental studies in vitro and in vivo have shown that it can prevent or slow the progression of a variety of diseases, including PD. In this systematic review, we summarize the effects of resveratrol in experimental in vivo and in vitro models of PD and discuss the molecular mechanisms involved in its action. The bibliographic search was performed in the databases of PubMed, Web of Science, SciELO and Google Scholar, and based on the inclusion criteria, 41 articles were selected and discussed. Most of the included studies have demonstrated neuroprotective effects of resveratrol. In general, resveratrol prevented behavioral and/or neurological disorders, improved antioxidant defenses, reduced neuroinflammatory processes, and inhibited apoptosis. In summary, this systematic review offers important scientific evidence of neuroprotective effects of resveratrol in PD and also provides valuable information about its mechanism of action that can support future clinical studies.

**Keywords:** Anti-apoptotic; Anti-inflammatory; Antioxidant; Neurodegeneration; Neuroprotection; Resveratrol.

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