

□ **1: CNS Neurol Disord Drug Targets.** 2008 Oct;7(4):321-42.

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Drugs used to treat Parkinson's disease, present status and future directions.

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Parkinson's disease (PD) is the second most common neurodegenerative disorder, after Alzheimer's disease. In PD, motor symptoms result from the degeneration and loss of pigmented dopaminergic neurons of the substantia nigra pars compacta of the basal ganglia. Other neuronal fields and neurotransmitter systems are also involved, including non-adrenergic, serotonergic and cholinergic neurons. Since the early 1960s the treatment of PD has been based on the pharmacologic replacement of dopamine accomplished with the precursor of dopamine, 3, 4-dihydroxy-L-phenylalanine (L-dopa). The addition of carbidopa, an inhibitor of the decarboxylase represented a tremendous improvement in therapy and is still a mainstay of the treatment of PD. Dopamine agonists may also be used, as well as inhibitors of monoamine oxidase-B or catechol-O-methyltransferase. Other medications include anticholinergics and amantadine. These therapies are only symptomatic and none halt or lessen dopaminergic neuron degeneration and the progression of the disease. This has prompted the search for novel and alternative pharmacological targets and neuroprotective therapies. **In this context, there are data to suggest a benefit from glial cell line-derived neurotrophic factor, neuroimmunophilin ligands, minocycline, Coenzyme Q10, creatine, reduced glutathione, adenosine A2A receptor antagonists as well as glutamate release inhibitors.** Restorative techniques to compensate for cell loss include tissue transplantation and gene transfer therapy. Due to the paucity of data regarding non-pharmacological approaches such as diet therapy or antioxidant therapy, these await more studies. There are also few studies on medicinal plants. Other areas of increasing importance would thus include the investigation of active constituents of plants and phytomedicines with a view to the discovery of new compounds. Finally, stem cell therapy may offer the promise of restoring functionality.

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