

Levodopa in the Treatment of Parkinson's Disease: Current Status and New Developments

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Authors: [Salat, David](https://content.iospress.com:443/search?q=author%3A%28%22Salat, David%22%29) (<https://content.iospress.com:443/search?q=author%3A%28%22Salat, David%22%29>) | [Tolosa, Eduardo](https://content.iospress.com:443/search?q=author%3A%28%22Tolosa, Eduardo%22%29) (<https://content.iospress.com:443/search?q=author%3A%28%22Tolosa, Eduardo%22%29>)

Affiliations: Universitat Autònoma de Barcelona, Barcelona, Spain | Parkinson's Disease and Movement Disorders Unit, Neurology Service, Hospital Clínic, University of Barcelona; Centro de Investigación Biomédica en Red sobre Enfermedades Neurodegenerativas (CIBERNED) Barcelona, Spain

Note: [] Correspondence to: Eduardo Tolosa MD, FRCP, Neurology Service, Hospital Clinic, University of Barcelona, Villarroel 170, Barcelona 080036, Spain. Tel.: +34 93 227 57 85; Fax: +34 93 227 57 83; E-mail: etolosa@clinic.ub.es

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Abstract

Levodopa, a dopamine precursor, is an effective and well-tolerated dopamine replacement agent used to treat Parkinson's disease (PD). Oral levodopa has been widely used for over 40 years, often in combination with a dopa-decarboxylase inhibitor (DDCI), which reduces many treatment complications, extending its half-life and increasing levodopa availability to the brain. Entacapone, a catechol-O-methyltransferase inhibitor, can also be used to improve the bioavailability of levodopa, especially when used in conjunction with a DDCI. During early-stage PD, treatment will depend on the severity of symptoms; if greater symptomatic effect is required then levodopa or dopamine agonists are usually the drugs of choice. The ability to remain employable or physically active is an important goal in younger patients, therefore, in some instances levodopa initiation should be considered early on, either as a monotherapy or in combination with other drugs. The clinical use of levodopa may eventually be limited by the development of various treatment-related complications, including response fluctuations, dyskinesia and psychiatric problems. Motor complications are related to the intermittent delivery of dopamine-replacing drugs to the brain. Triple combination of levodopa/carbidopa/entacapone available in a single tablet in multiple levodopa dose strengths offers flexibility and helps control response fluctuations. Recent developments in treatment with levodopa try to obtain continuous delivery with levodopa and include duodenal infusion of a levodopa/carbidopa, transdermal levodopa patch, and oral pro-levodopa. Levodopa remains the most potent dopaminergic therapy for PD.

