

## CATECHOL-O-METHYLTRANSFERASE (COMT) INHIBITORS

These drugs include entacapone, and opicapone. These inhibit the enzyme catechol-O-methyltransferase (COMT), which breaks down dopamine. Hence, they increase the amount of dopamine available in the brain. They are used to increase the effect of levodopa, particularly its duration of action, although they may increase dyskinesias. Opicapone is not yet available in India.



## AMANTADINE

Amantadine can ease the symptoms of PD and is also quite effective for involuntary movements called dyskinesias, which may occur with long-term levodopa therapy. It is available as immediate-release and extended-release forms.

## ANTICHOLINERGICS

These drugs include trihexyphenidyl and benztropine. They help repair the imbalance between dopamine and other neurotransmitters in the brain, which are disturbed in PD. These drugs may also reduce tremors. However, their use has been associated with confusion and memory problems in older adults, so clinicians rarely prescribe them to this group



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# MEDICATIONS FOR TREATING PARKINSON'S DISEASE



Many groups of drugs can be used for the treatment of Parkinson's Disease (PD). These drug groups are described here.

## LEVODOPA AND LEVODOPA/CARBIDOPA COMBINATION

Levodopa, or L-DOPA, is the most frequently used drug for treating PD and is considered the 'gold standard' of treatment. It is the most effective drug for treating the symptoms of stiffness and slowness, although its effects on tremors are variable. Levodopa is a chemical that passes into the brain and is converted into dopamine. As PD occurs because the brain lacks dopamine, levodopa is very helpful in treating it.

Levodopa is usually used in combination with another drug called carbidopa. "Carbidopa reduces peripheral metabolism (breakdown) of levodopa and thereby increases levels of dopamine in the brain. Carbidopa also prevents some side effects of levodopa, such as nausea and vomiting. Levodopa is available in India as an oral tablet. The tablets can be immediate-release with quick action and a shorter duration of action or controlled or extended-release preparations, which release the medication slowly and provide a steady effect. The orally disintegrating forms are useful for patients with swallowing difficulties. In other parts of the world, levodopa is also available as an intestinal infusion or as an inhaled medicine. The infusion

preparation is called levodopa/carbidopa intestinal gel. It is used in patients who develop motor fluctuations with oral levodopa/carbidopa but continue to respond to levodopa/carbidopa. The infusion leads to steady blood levels of the drug in the blood. This gel is infused directly into the small intestine through a tube inserted into the stomach through surgery. The inhaled form of levodopa may be useful for patients as an on-demand medication when oral medications do not work or suddenly lose their effect (sudden OFF).

## DOPAMINE AGONISTS

Dopamine agonists mimic the effects of dopamine in the brain. Unlike levodopa, they do not convert to dopamine in the brain but directly stimulate the dopamine receptors in the brain. Although they are less effective than levodopa, they have a longer duration of action and can be used to supplement the effects of

levodopa or even as a stand alone treatment. These drugs include pramipexole, ropinirole, rotigotine, and apomorphine. While pramipexole and ropinirole are available as oral preparations, rotigotine is available as a skin patch. Apomorphine is available as a subcutaneous (beneath the skin) injection, infusion therapy, and sublingual preparations. Subcutaneous apomorphine can be used to tide over sudden off periods.

## MONOAMINE OXIDASE-B INHIBITORS (MAO-B INHIBITORS)

This group includes drugs like rasagiline, selegiline, and safinamide. These drugs block the enzyme monoamine oxidase-B (MAO-B), which breaks down dopamine in the brain, thereby increasing the quantity of dopamine available. These drugs are usually used as an adjunct to levodopa therapy, although rasagiline may also be used as the sole medication in early PD.