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# Parkinson's Disease Drugs

Dealing with Parkinson's Disease drugs can be frustrating. Both doctor and patient need to be actively involved in finding the dose that works. People respond differently to Parkinson's Disease drugs, so finding the right dose for each individual takes time and patience. As the disease progresses, it is necessary to increase the dosage and sometimes it is necessary to combine medications.

## Levodopa

Levodopa or L-Dopa is one of the most common Parkinson's Disease drugs. It is usually one of the first medications prescribed at the onset of Parkinson's Disease. It basically works by increasing dopamine levels.

When it was first discovered that Parkinson's Disease was caused by a depletion of dopamine levels, the obvious solution was to replenish the levels. But this didn't work, as it was quickly determined that dopamine doesn't cross the blood-brain barrier. The next step was to then inject a chemical that could cross this barrier. It turned out that such a chemical existed which could then be naturally converted to dopamine in the brain. This chemical was L-Dopa.

Side effects include:

- Nausea and vomiting
- Hallucinations
- Paranoia
- Compulsive behaviour
- Drowsiness
- Long-term use results in dyskinesias (involuntary movements)

## Dopamine Agonists

An agonist is a molecule that binds to a part of a cell and initiates cell activity. Dopamine agonists directly stimulate dopamine receptors. This means that the patient's brain no longer has to depend on the degenerating nerve cells to stimulate these receptors. They mainly work to reduce motor complications, and work best when they are not combined with any other drug. There are several dopamine agonists on the market:

- Ropinirole (Requip<sup>®</sup>)
- Bromocriptine (Parlodel<sup>®</sup>)
- Pergolide (Permax<sup>®</sup>)
- Apomorphine (Apokyn<sup>®</sup>)
- Pramipexole (Mirapex<sup>®</sup>)

Side effects include:

- Psychosis
- Edema (build up of fluid and swelling in tissue)
- Nausea and vomiting
- Fibrosis
- Orthostatic hypotension

Apomorphine (Apokyn<sup>®</sup>) differs from the other agonists as it is not taken in pill form. It needs to be injected just under the skin.

## COMT (catechol-O-methyltransferase) Inhibitors

COMT will increase the bioavailability of L-Dopa. Metabolic reactions allow only 1% of an Levodopa taken in pill form to reach the brain. Other substances also compete with Levodopa for absorption in the gut. Adding COMT inhibitors reduces the metabolic actions that break down Leodopa, including inhibiting an enzyme that degrades the drug. This means there'll be more Levodopa to enter the brain and be converted to dopamine. Clinical trials have shown that Levodopa works for a longer time in the presence of an COMT inhibitor.

COMT Inhibitors currently available:

- Entacapone (Comtan™)
- Tolcapone (Tasmar™)

Adverse effects include:

- Accumulation of Levodopa in cells which can cause dyskinesias
- Psychosis
- Diarrhea
- Abdominal pain
- Dryness of the mouth
- Urine discoloration
- Orthostatic hypotension

## MAO-B Inhibitors

Selegiline and Resagiline are the main MAO-B inhibitors currently on the market. Clinical trials have found that MAO-B inhibitors may have a neuro-protective effect. That is, they may prevent or slow the death of neurons.

Side effects include:

- Insomnia
- Hallucinations
- Orthostatic hypotension

Although there may be no cure there are several Parkinson's disease drugs that will improve quality of life. These drugs don't work to get rid of the disease, but rather to alleviate symptoms. A lot of research is still underway, in the hope of developing more helpful drugs, and better yet, maybe a cure.