

24 April 2020

## Levodopa – product shortages

There have been supply issues for medicines used to treat Parkinson's Disease. Sinemet® (levodopa + carbidopa) brand has been discontinued in the USA. There have also been problems with supply of Madopar Rapid® (levodopa + benserazide) dispersible tablets. These supply problems mean that patients may need to be switched to alternative products.

The following tables are intended as a guide. Due to the complex nature of many patients with Parkinson's Disease, a complete review of their treatment regimen by a specialist may be required, rather than switching between products. After any product change monitor symptomatic control of Parkinson's Disease (e.g. tremor, stiffness, slowness of movement) and for increased adverse effects (e.g. confusion, drowsiness, palpitations and dystonia).

Ensure the dose of levodopa remains the same when switching between standard release formulations. The total daily dose of the dopa-decarboxylase inhibitor (carbidopa or benserazide) should be at least 70 mg to ensure full inhibition of extracerebral dopa-decarboxylase. Doses lower than 70-100 mg daily are likely to be associated with levodopa-induced nausea and vomiting. Higher doses e.g. carbidopa up to 600 mg daily, are safe and usually well tolerated.

The bioavailability is lower from modified release formulations than from standard release formulations. Bioavailability of Sinemet CR® and Mylan modified release is 70% of standard release tablets. Bioavailability of Madopar HBS® is 50-70% of standard capsules. All modified release formulations produce lower maximum serum concentrations and longer times to maximum serum concentrations. Switching from modified release to standard formulations may require lower total doses of levodopa given more frequently. Seek specialist advice.

### Levodopa + carbidopa

Products	Alternative (when products not available)
Tablet: levodopa 100 mg + carbidopa 25 mg	
Sinemet®, Kinson® Sindopa® (not subsidised)	Switch between brands.
Tablet: levodopa 250 mg + carbidopa 25 mg	
Sinemet®	Use two and a half (2 ½) standard release 100/25 tablets e.g. Kinson® or Sinemet®.
Modified release tablet: levodopa 100 mg + carbidopa 25 mg	
Carbidopa and Levodopa extended-release (Mylan)	Halve a Sinemet CR® 200/50 mg or Mylan modified release 200/50 mg tablet. <i>Do not chew or crush the halved tablets.</i>
Modified release tablet: levodopa 200 mg + carbidopa 50 mg	
Sinemet CR® Carbidopa and Levodopa extended-release (Mylan)	Two Mylan modified release 100/25 tablets.

Note: Mylan modified release tablets are section 29.

### Levodopa + benserazide

Products	Alternative (when products not available)
Dispersible tablet: levodopa 50 mg + benserazide 12.5 mg	
Madopar Rapid®	Switch to Madopar® 62.5 mg capsule (can be opened and dispersed in water). <i>The onset of effect may be slower for capsules.*</i>
Capsule: levodopa 50 mg + benserazide 12.5 mg	
Madopar® 62.5 mg	Switch to Madopar Rapid® dispersible tablet. <i>The onset of effect may be quicker for dispersible tablets.*</i>
Capsule: levodopa 100 mg + benserazide 25 mg	
Madopar® 125 mg	Two Madopar® 62.5 mg capsules or dispersible tablets.
Capsule: levodopa 200 mg + benserazide 50 mg	
Madopar® 250 mg	Two Madopar® 125 mg capsules.
Modified release capsule: levodopa 100 mg + benserazide 25 mg	
Madopar HBS®	Nothing similar, requires specialist advice.

\*The pharmacokinetic profile of levodopa from standard capsules and dispersible tablets is similar. The T<sub>max</sub> is approximately one hour for standard capsules and tends to be shorter for dispersible tablets. T<sub>max</sub> for Madopar HBS® is approximately 3 hours.

Alternatively, switch between dopa-decarboxylase inhibitors (i.e. from carbidopa to benserazide or vice versa). Use a product that provides the same total dose of levodopa. Monitor for changes in control of Parkinson's Disease, adjusting dose as necessary. See [PHARMAC: Online Schedule](#)