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Published in:
Journal of Neurochemistry

Publication date:
2011

Document version
Final published version

Citation for published version (APA):

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Download date: 25. Mar. 2020
Dose- and time-dependent therapeutic and adverse effects of *Mucuna pruriens* extract in the 6-OHDA rat model of Parkinson's disease

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**Introduction**

In traditional Ayurvedic Indian medicine, preparations of *Mucuna pruriens* seeds (fig.) are used in the treatment of Parkinson’s disease (PD). It has been suggested that *Mucuna* preparations may posses some clinical advantages over conventional, synthetic L-DOPA/carbidopa preparations, including a rapid onset of action and longer on time without concomitant increases in dyskinesias (Katzenschlager et al. 2004, Kasture et al. 2009, Lieu et al. 2010). Alcoholic extracts of *Mucuna* seeds are rich in L-DOPA, but other, as yet unknown compounds may contribute to its therapeutic effects.

**Materials and Methods**

Twenty-four 6-OHDA-lesioned rats were used (Sprague Dawley, males; 9 µg 6-OHDA free base in 2 µl saline, 0.1% ascorbic acid stereotaxically injected into left medial forebrain bundle), all displaying significant contralateral forelimb akinesia and amphetamine-induced rotations 2-3 weeks postsurgery.

Ten rats were assigned to a chronic “dose-finding” study (series M1, two periods of 4 weeks treatment) and 14 rats assigned to a comparative study of therapeutic and adverse effects of chronic *Mucuna* versus L-DOPA treatments without additives (series M2-D2, 4 daily injections in week 1, 5 injections in week 2 and 7 injections in week 3) after a wash-out period of 4 weeks the latter group of 14 rats was used to study effects of *Mucuna* and L-DOPA in the presence of benserazide (peripheral decarboxylase inhibitor).

**Results**

Therapeutic dose-finding. *Mucuna* without benserazide.

- **Therapeutic effect chronic treatment**

**Conclusions**

- Chronic *Mucuna* treatments induced a sustained motor improvement that took days to build up and lasted for 3-4 days after cessation of treatment, i.e. similar to the long duration response of L-DOPA treatment. Determination of the lowest, therapeutically effective doses required therefore repeated dosing.
- **Mucuna** extract was more effective than (synthetic) L-DOPA at equivalent L-DOPA doses of 12.5-25 mg/kg ip. However, chronic treatment with these doses of *Mucuna* extract caused also more severe AIBs (predominantly limbic, but also axial and orofacial dyskinesias) than L-DOPA alone.
- Go-treatments with benserazide in *Mucuna* or L-DOPA-sensitized rats, did not reveal differences in therapeutic or adverse effects of *Mucuna* or L-DOPA.
- *Mucuna* extract lacking L-DOPA did not show any therapeutic effect.

**Acknowledgements**

This work is supported by the Lundbeck and Danske Parkinsonsforening.

**References**