



MPTP Induced Mouse Model

Mice that receive acute, chronic or subchronic administration of the pyridine toxin 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) selectively lose significant numbers of dopaminergic neurons in two midbrain structures, the substantia nigra (SN) and the ventral tegmental area (VTA).

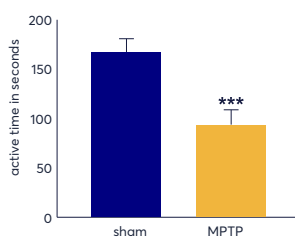
Loss of dopaminergic cells in SN mimic the clinical condition in PD and leads to motor dysfunction. The dopaminergic loss in mouse VTA is of unknown relevance to PD, but may contribute to the cognitive deficits of PD, because of these neurons' projections to the frontal cortex.

- Loss of dopaminergic neurons
- Motor deficits in behavioral read outs

Figure 1: Open Field test. Animals were injected with 4 x 20 mg/kg MPTP or vehicle. Two days after treatment, animals were tested in the open field test for activity, hyperactivity and distance travelled. n = 9 - 10; unpaired t-test; Mean + SEM. **p<0.01; ***p<0.001.

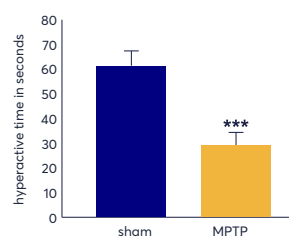
Activity

Figure 1:



Hyperactivity

Figure 1:



Distance

Figure 1:

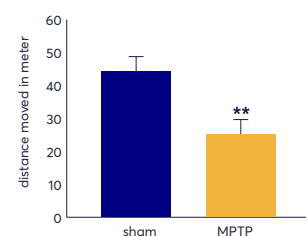
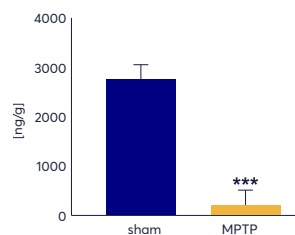


Figure 2: DOPAC and HVA measurement. Animals were injected with 4 x 20 mg/kg MPTP or vehicle. Six days after treatment, animals were sacrificed and the caudate putamen analyzed for DOPAC and HVA levels. n = 3 - 5; unpaired t-test; Mean + SEM. ***p<0.001.

DOPAC

Figure 2:



HVA

Figure 2:



Substantia Nigra

Figure 3:

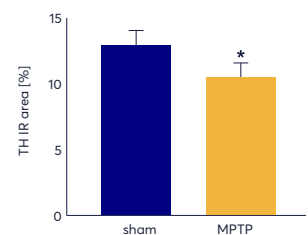


Figure 3: Tyrosine hydroxylase (TH) quantification in the substantia nigra after MPTP lesion. Animals were injected with 4 x 20 mg/kg MPTP or vehicle. Six days after treatment, animals were sacrificed and the striatum analyzed for TH levels. n = 3 - 5; unpaired t-test; Mean + SEM. *p<0.05.

Meredith GE, Rademacher DJ. MPTP mouse models of Parkinson's disease: an update. J Parkinsons Dis. 2011;1(1):19-33.

