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Author: Veronica Francardo

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Modeling Parkinson's disease and treatment complications in rodents: potentials and pitfalls of the current options.

Veronica Francardo¹

¹Basal Ganglia Pathophysiology Unit, Department of Experimental Medical Science, Lund University, BMC F11, SE-22184 Lund, Sweden

Abstract

Animal models of neurological deficits are essential to assess new therapeutic options and reduce treatment complications. Over the last decades, several rodent models of Parkinson's disease have been developed, and have now become the first-line experimental tool for therapeutic screening purposes. Which model is the most predictive for identifying the efficacy of symptomatic or disease-modifying interventions is still a matter of debate. None of the models so far available is able to recapitulate all the features of the human disease, but several well-characterized models with complementary features currently provide a valuable repertoire of tools to address specific scientific hypotheses. This article reviews the rodent models of Parkinson's disease currently available, with a particular focus on symptomatic models used to mimic parkinsonian motor deficits and treatment-related complications. Advantages and disadvantages of each model are presented and discussed to assist the decision of investigators who wonder which model may be the most suitable for their particular research project.

Key words: Parkinson's disease, L-DOPA-induced dyskinesia, 6-OHDA, MPTP, animal models, rodents.

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