ARE ANIMAL MODELS USEFUL IN UNDERSTANDING PARKINSON'S DISEASE?

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Parkinson's disease (PD) is one of the most prevalent neurodegenerative diseases second only to Alzheimer's disease (AD). It is characterized by the degeneration of dopamine (DA) neurons in substantia Nigra (SN) which manifests as bradykinesia, rigidity and tremor. Several developments in understanding the disease and treatment were made in the recent years. Most of these were facilitated by animal models for PD. Several animals ranging from unicellular organisms to non human primates are used in making these animal models using different approaches which are aimed at altering or destroying DA neurons in SN. These animal models broadly fall into categories such as toxin, pharmacological, inflammatory, ubiquitin proteasomal system inhibition/autophagy and genetic models. Using above mentioned approaches animals are made to express phenotype similar to PD in human beings and these are studied to understand the disease mechanisms and to develop and test treatment modalities. With the advent of newer animal models it is possible now to focus on treatment options aimed at cure rather than just symptoms. In this debate we will try to discuss the way modeling PD in different animals, their phenotypes, their advantages and disadvantages. We will also discuss about how these animal models can represent PD in human disease precisely how the results from these animal models can be translated in to clinical use more efficiently. Moreover, we will discuss the the limitation of the current animal models and the new generation of future animal models of PD.