

# Trehalose as a promising therapeutic candidate for the treatment of Parkinson's disease

Khalifeh M.

Barreto G.E.

Sahebkar A.

Parkinson's disease (PD) is a progressive movement disorder resulting primarily from loss of nigrostriatal dopaminergic neurons. PD is characterized by the accumulation of protein aggregates, and evidence suggests that aberrant protein deposition in dopaminergic neurons could be related to the dysregulation of the lysosomal autophagy pathway. The therapeutic potential of autophagy modulators has been reported in experimental models of PD. Trehalose is a natural disaccharide that has been considered as a new candidate for the treatment of neurodegenerative diseases. It has a chaperone-like activity, prevents protein misfolding or aggregation, and by promoting autophagy, contributes to the removal of accumulated proteins. In this review, we briefly summarize the role of aberrant autophagy in PD and the underlying mechanisms that lead to the development of this disease. We also discuss reports that used trehalose to counteract the neurotoxicity in PD, focusing particularly on the autophagy promoting, protein stabilization, and anti-neuroinflammatory effects of trehalose. © 2019 The British Pharmacological Society