3. AIMS AND OBJECTIVES

The aim of the present research work was to investigate the neuroprotective effect of withanolides and curcuminoids on the neurochemical alterations, mitochondrial complexes, antioxidants/oxidants status and inflammatory cascades in ventral mid brain/striatum of the MPTP-induced mouse model of Parkinson’s disease.

Specific objectives of the present work

- Extraction of withanolides and curcuminoids from the standard extracts of Withania somnifera (L.) root and dried rhizome of Curcuma longa (L.) respectively.
- Quantitative analysis of marker compounds present in withanolides and curcuminoids.
- In vitro screening of total anti-oxidant activity, nitric oxide inhibition, chelating properties and MAO-B inhibitory action of withanolides and curcuminoids.
- Pilot study for optimum dose finding of MPTP model development as well as withanolides and curcuminoids over PD marker parameters.
- Evaluate the efficacy of withanolides and curcuminoids over monoaminergic neurotransmission and behavioral assessment in experimental model.
- To investigate the efficacy profile of the tested compounds on mitochondrial complexes, nNOS expression and ATP content in experimental groups.
- Evaluate the efficacy of withanolides and curcuminoids on oxidative/antioxidant marker enzymes in different groups.
- Evaluation of withanolides and curcuminoids over the pro-inflammatory cytokines, iNOS and GFAP protein expression in the MPTP- induced mice brain.