5. CONCLUSIONS

- The method of extraction of *O. sanctum, L* leaves by Soxhlet with prior defatting and the choice of the solvents selected were appropriate as indicated by the high yield of the polar polyphenolics.

- The data and findings provided by the study suggested the correct choice of the biomarkers in screening compounds for neuroprotection in selected MPP model.

- However, it was noted that moderate doses of MPTP resulted in compensatory increased levels for SOD and CAT together with no morphological abnormalities and transient decrease in mitochondrial complex I.

- As increased levels of NO were observed in MPTP-inflicted animals, it paves its way for NOS inhibitors that are known to possess anti-inflammatory effects. This in turn could be of prime importance in considering them for its therapeutic role in treatment of neurodegeneration where inflammatory mediators are one of the major causes.

- Medhya rasayanas particularly *O. sanctum, L* that exhibited reduction in both oxidative and nitrosative stress with improvement in the biochemical and neurochemical markers (which were significantly affected in MPTP-inflicted experimental animals) provided a database to further explore its therapeutic role as “neuroprotective” primarily through its influences on stress markers.

- Simultaneous administration of Os HM with bromocriptine exhibited synergism in amelioration of oxidative and nitrosative stress biomarkers.

- The dose-dependent improvement in neurobehavioral markers, depletion in lipid and protein oxidation products and improvement in endogenous antioxidant pool of GSH and SOD levels on pretreatment with Os EO are comparable to the synthetic (dual acting) DA receptor agonist and neuroprotective drug i.e. bromocriptine. However, since ceiling effect was observed at the two higher doses, it may be noted doses of EO could be lowered below 0.2 ml/kg b.w in gradient way to get better results.

- The phytochemicals including ursolic acid and eugenol have shown to exhibit neuroprotection against MPTP-induced apoptosis *in vitro*. 
Thus, the antioxidant approach that can effectively serve as endogenous enzyme boosters and iron chelators could be crucial as therapeutic modality in the form of “neuroprotectives.”

The results agree with the fact that the natural compounds rich in antioxidants involve a considerable improvement in the enzyme activity and reduce oxidative stress, which plays a significant role in the toxicity inversion of MPTP. It provided deeper insights into the antioxidant approach as therapeutic intervention for neurodegenerative disorder of PD by understanding probable mechanism of neuroprotection at the biochemical, cellular and molecular levels.

The study thus substantiates that antioxidant-enriched Ocimum sanctum can correct the disrupted homeostasis and redox imbalances caused due to excess ROS and RNS in PD. This in turn signifies that the selected herb can act as neuroprotective by targeting on neurodegenerative pathways including:

a. Oxidative and nitrosative stress and
b. Associated neuroinflammation