OBJECTIVES OF THE PRESENT STUDY

1) To induce unilateral Parkinsonism in adult male Wistar Rats using rotenone and to study the effect of 5-HT, GABA and BMC treatment individually and in combinations.

2) To quantify dopamine in various brain regions of control and experimental groups of PD rats.

3) To study the differentiation of bone marrow cells using cell tracker dye PKH2GL and Nestin to the premature neurons in the substantia nigra of the control and experimental groups of PD rats.

4) To study the dopamine receptor subtypes binding parameters and their functional regulation in Parkinson’s disease using Bone marrow cells and neurotransmitters combinations.

5) To study the gene expression of dopamine D\textsubscript{1} and D\textsubscript{2} receptor subtypes using Real time PCR in the brain regions of control and experimental groups of PD rats.

6) To study the regulation of second messengers-cyclic AMP, cyclic GMP, inositol triphosphate in the brain regions of control and experimental groups of PD rats.

7) To study the transcription factor CREB, pro-apoptotic protein Bax, regulatory protein ubiquitin carboxy-terminal hydrolase and neural protein of α-synuclein in the brain regions of control and experimental groups of PD rats.
8) To study the localisation and expression status of dopamine D₁ and D₂ in the brain regions of control and experimental groups of PD rats using specific antibodies in confocal microscope.

9) To study the behaviour changes in control and experimental PD rats using rotarod test, elevated plus maze, social interaction test, grid walk test and narrow beam test to assess the motor learning deficit.