OBJECTIVES OF THE PRESENT STUDY

1. To induce spinal cord injury in rats and to study the effect of 5-HT, GABA and BMC treatment individually and in combination.

2. To investigate the behavioural changes in control and experimental rats using rotarod test, grid walk test and narrow beam test.

3. To study cholinergic receptors alterations and in the spinal cord and brain regions of control and experimental rats.

4. To analyse the muscarinic receptors - muscarinic M1, M2, M3, nicotinic receptor - \( \alpha_7 \) nAChR, cholinergic enzymes - AChE and ChAT gene expression in the spinal cord and brain regions of control and experimental rats using real time PCR.

5. To study gene expression studies of second messenger enzyme - PLC; transcription factor - CREB; apoptotic factors - Bax, Caspase-8, TNF\( \alpha \) and NF-\( \kappa \)B; anti-oxidant enzymes SOD and GPX; cell survival factors - BDNF, GDNF, IGF-1, Akt-1 and Cyclin D2 in the spinal cord and brain regions of control and experimental rats using real time PCR.

6. To study the second messenger - IP3, cGMP and cAMP content in the spinal cord and brain regions of control and experimental rats.

7. To study the localization and expression status of muscarinic M1, M3 and \( \alpha_7 \) nAChR using confocal microscope by immunofluorescent specific
antibodies in the spinal cord and brain sections of control and experimental rats using Confocal microscope.

8. To study neuronal regeneration using Brdu and NeuN in spinal cord using confocal microscope.