Results

Body weight, feed intake, water consumption and blood glucose level in control and experimental groups of rats

There was a significant reduction (p<0.001) in the body weight of epileptic rats compared to control rats and *Bacopa monnieri* treated control rats on 30\textsuperscript{th} and 45\textsuperscript{th} day of experiment. The body weight of *Bacopa monnieri* and carbamazepine treated epileptic rats reversed (p<0.001) to control on 30\textsuperscript{th} and 45\textsuperscript{th} day of experiment (Table- 1). There is a significant decrease (p<0.001) in the feed intake and water consumption of epileptic rats on 30\textsuperscript{th} and 45\textsuperscript{th} day of experiment compared to control rats and *Bacopa monnieri* treated control rats. Both *Bacopa monnieri* and carbamazepine treatment to epileptic rats significantly increased the feed intake and water consumption on 30\textsuperscript{th} (p<0.05) and 45\textsuperscript{th} (p<0.001) day of experiment (Table 2, 3). There was no significant change in the blood glucose level in the control and experimental groups of rats (Table- 4).

5-HT and 5-HIAA content (nmoles/g wet wt.) in the cerebral cortex of control and experimental groups of rats

5-HT content in the cerebral cortex showed a significant decrease (p<0.001) in epileptic rats compared to control rats and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly increased the 5-HT contents near to control. 5-HIAA content was significantly increased (p<0.01) in epileptic rats compared to control rats and *Bacopa monnieri* treated control rats. Both *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly decreased the 5-HIAA content to control. 5-HT/5-HIAA ratio showed a significant decrease (p<0.001) in the epileptic rats compared to control rats and *Bacopa monnieri* treated control rats. Treatment with
Bacopa monnieri (p<0.01) to epileptic rats significantly reversed the 5-HT/5-HIAA ratio towards control. Treatment with carbamazepine (p<0.05) to epileptic rats showed no significant change in the 5-HT/5-HIAA compared to epileptic rats (Table- 5).

5-HT and 5-HIAA content (nmoles/g wet wt.) in the hippocampus of control and experimental groups of rats

5-HT content in the hippocampus showed a significant decrease (p<0.01) in epileptic rats compared to control rats and Bacopa monnieri treated control rats. Bacopa monnieri (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly increased the 5-HT contents near to control. 5-HIAA content was significantly increased in epileptic rats (p<0.001) and carbamazepine treated epileptic rats (p<0.001) compared to both control rats and Bacopa monnieri treated control rats. Only Bacopa monnieri (p<0.01) treatment to epileptic rats significantly decreased the 5-HIAA content to control. 5-HT/5-HIAA ratio showed no significant change in the hippocampus of control and experimental groups of rats (Table- 6).

5-HT and 5-HIAA content (nmoles/g wet wt.) in the cerebellum of control and experimental groups of rats

5-HT content in the cerebellum showed a significant decrease (p<0.001) in epileptic rats compared to control rats and Bacopa monnieri treated control rats. Bacopa monnieri (p<0.01) and carbamazepine (p<0.01) treatment to epileptic rats significantly increased the 5-HT contents near to control. 5-HIAA content was significantly increased in epileptic rats (p<0.001) and carbamazepine treated epileptic rats (p<0.05) compared to both control rats and Bacopa monnieri treated control rats. Only Bacopa monnieri (p<0.01) treatment to epileptic rats significantly decreased the 5-HIAA content to control. 5-HT/5-HIAA ratio showed a significant decrease (p<0.001) in the epileptic rats and carbamazepine treated epileptic rats (p<0.05) compared to control rats and Bacopa monnieri treated control rats. Treatments with
Results

*Bacopa monnieri* (p<0.01) to epileptic rats significantly reversed the 5-HT/5-HIAA ratio towards control (Table-7).

5-HT and 5-HIAA content (nmoles/g wet wt.) in the brainstem of control and experimental groups of rats

5-HT content in the brainstem showed a significant decrease (p<0.001) in epileptic rats compared to control rats and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.05) and carbamazepine (p<0.01) treatment to epileptic rats significantly increased the 5-HT contents near to control. 5-HIAA content was significantly increased in epileptic rats (p<0.05) and carbamazepine treated epileptic rats (p<0.05) compared to both control rats and *Bacopa monnieri* treated control rats. Only *Bacopa monnieri* (p<0.05) treatment to epileptic rats significantly decreased the 5-HIAA content to control. 5-HT/5-HIAA ratio showed no significant change in the brainstem of control and experimental groups of rats (Table-8).

BRAIN 5-HT$_{2C}$ RECEPTOR ALTERATIONS IN THE CONTROL AND EXPERIMENTAL GROUPS OF RATS

CEREBRAL CORTEX


Scatchard analysis of $[^3]$H]mesulergine against mesulergine in cerebral cortex showed a significant increase (p<0.001) in B$_{max}$ and K$_d$ (p<0.01) of epileptic group compared to control rats and *Bacopa monnieri* treated control rats. Treatments with *Bacopa monnieri* and carbamazepine significantly reversed (p<0.001) the B$_{max}$ to near control. K$_d$ showed a significant decrease (p<0.01) in both *Bacopa monnieri* and carbamazepine treated groups compared to epileptic rats (Fig. 1; Table-9).
Real-Time PCR analysis of 5-HT\textsubscript{2C} Receptors

The gene expression studies by Real-Time PCR analysis showed that 5-HT\textsubscript{2C} receptor mRNA in cerebral cortex was significantly (p<0.001) up regulated in epileptic group compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine administration to epileptic rats significantly (p<0.01) reversed the up regulation compared to epileptic rats (Fig. 2; Table- 10).

HIPPOCAMPUS

Scatchard analysis using $[^3]$Hmesulergine against mesulergine

Scatchard analysis of $[^3]$Hmesulergine against mesulergine in hippocampus showed a significant increase (p<0.001) in B\textsubscript{max} and K\textsubscript{d} of epileptic group compared to control rats and Bacopa monnieri treated control rats. Treatments with Bacopa monnieri and carbamazepine significantly reversed (p<0.001) the B\textsubscript{max} to near control. K\textsubscript{d} showed a significant decrease in both Bacopa monnieri (p<0.01) and carbamazepine (p<0.001) treated groups compared to epileptic groups (Fig. 3; Table- 11).

Real-Time PCR analysis of 5-HT\textsubscript{2C} Receptors

The gene expression studies by Real-Time PCR analysis showed that 5-HT\textsubscript{2C} receptor mRNA in hippocampus was significantly (p<0.001) up regulated in epileptic group compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine administration to epileptic rats significantly (p<0.01) reversed the up regulation to control (Fig. 4; Table- 12).

CEREBELLUM

Scatchard analysis using $[^3]$Hmesulergine against mesulergine

Scatchard analysis of $[^3]$Hmesulergine against mesulergine in cerebellum showed a significant decrease in B\textsubscript{max} (p<0.001) and K\textsubscript{d} (p<0.01) of epileptic group
Results

compared to control rats and *Bacopa monnieri* treated control rats. Treatments with *Bacopa monnieri* and carbamazepine significantly reversed (p<0.001) the B\textsubscript{max} to near control. K\textsubscript{d} showed a significant increase (p<0.01) in both *Bacopa monnieri* and carbamazepine treated groups compared to epileptic groups (Fig. 5; Table- 13).

Real-Time PCR analysis of 5-HT\textsubscript{2C} Receptors

The gene expression studies by Real-Time PCR analysis showed that 5-HT\textsubscript{2C} receptor mRNA in cerebellum was significantly (p<0.001) down regulated in epileptic group compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine administration to epileptic rats significantly (p<0.01) reversed the down regulation to control level (Fig. 6; Table- 14).

BRAINSTEM

Scatchard analysis using [\textsuperscript{3}H]mesulergine against mesulergine

Scatchard analysis of [\textsuperscript{3}H]mesulergine against mesulergine in brainstem showed a significant decrease in B\textsubscript{max} (p<0.001) of epileptic group compared to control rats and *Bacopa monnieri* treated control rats. Treatments with *Bacopa monnieri* and carbamazepine significantly reversed (p<0.001) the B\textsubscript{max} to near control. There was no significant change in K\textsubscript{d} of control and experimental groups of rats. (Fig. 7; Table- 15).

Real-Time PCR analysis of 5-HT\textsubscript{2C} Receptors

The gene expression studies by Real-Time PCR analysis showed that 5-HT\textsubscript{2C} receptor mRNA in brainstem was significantly (p<0.001) down regulated in epileptic group compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine administration to epileptic rats significantly (p<0.01) reversed the down regulation to control level (Fig. 8; Table- 16).
BRAIN NMDA RECEPTOR ALTERATIONS IN THE CONTROL AND EXPERIMENTAL GROUPS OF RATS

CEREBRAL CORTEX

Scatchard analysis using $[^3H]MK-801$ against MK-801

Scatchard analysis of $[^3H]MK-801$ against MK-801 in cerebral cortex showed a significant decrease in $B_{\text{max}}$ ($p<0.001$) and of epileptic rats compared to control and Bacopa monnieri treated control rats. Bacopa monnieri ($p<0.001$) and carbamazepine ($p<0.001$) treatment to epileptic rats significantly reversed alterations in $B_{\text{max}}$ to near control level (Fig. 9; Table- 17). There was no significant change in $K_d$ in control and experimental rats.

Real-Time PCR analysis of NMDA2b Receptors

Real-Time PCR analysis showed that the NMDA2b receptor mRNA significantly decreased ($p<0.001$) in epileptic condition when compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine treatment to epileptic rats significantly reversed ($p<0.01$) NMDA2b receptor mRNA alteration to near control (Fig. 10; Table- 18).

Real-Time PCR analysis of mGLU5 Receptors

The mGlu5 receptor mRNA was significantly increased ($p<0.001$) in epileptic condition compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine treatment to epileptic rats significantly reversed ($p<0.001$) mGlu5 receptor mRNA alteration to near control (Fig. 11; Table- 19).

Real-Time PCR analysis of GLAST

The GLAST mRNA was significantly increased ($p<0.01$) in epileptic condition compared to control and Bacopa monnieri treated control rats. Bacopa
monnieri and carbamazepine treatment to epileptic rats significantly reversed (p<0.01) the up regulation of GLAST mRNA compared to epileptic rats (Fig. 12; Table- 20).

HIPPOCAMPUS

Scatchard analysis using [3H]MK-801 against MK-801

Scatchard analysis of [3H]MK-801 against MK-801 in hippocampus showed a significant decrease in B_{max}(p<0.001) and in K_d (p<0.01) of epileptic rats compared to control and Bacopa monnieri treated control rats. Bacopa monnieri (p<0.01) and carbamazepine (p<0.001) treatment to epileptic rats significantly reversed alterations in B_{max} to near control level. Bacopa monnieri (p<0.05) treatment to epileptic rats significantly reversed alterations in K_d to near control level. Carbamazepine treatment to epileptic rats showed no significant change in K_d when compared to epileptic rats. (Fig 13; Table- 21).

Real-Time PCR analysis of NMDA2b Receptors

Real-Time-PCR analysis showed that the NMDA2b receptor mRNA in hippocampus significantly down regulated (p<0.001) in epileptic rats when compared to control Bacopa monnieri treated control rats. Bacopa monnieri (p<0.01) and carbamazepine treatment (p<0.001) to epileptic rats increased NMDA_{2b} receptor mRNA to near control (Fig. 14; Table- 22).

Real-Time PCR analysis of mGLU5 Receptors

The mGlu5 receptor mRNA in hippocampus was significantly increased (p<0.001) in epileptic condition compared to control and Bacopa monnieri treated control rats. Bacopa monnieri (p<0.001) and carbamazepine treatment (p<0.01) to epileptic rats significantly reversed mGlu5 receptor mRNA alteration to near control (Fig. 15; Table- 23).
Real-Time PCR analysis of GLAST

The GLAST mRNA in hippocampus was significantly up regulated (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine treatment (p<0.001) to epileptic rats significantly reversed GLAST mRNA alteration to near control (Fig. 16; Table- 24).

CEREBELLUM
Scatchard analysis using [3H]MK-801 against MK-801

Scatchard analysis of [3H] MK-801 against MK-801 in cerebellum showed a significant increase in $B_{max}$ (p<0.001) and $K_d$ (p<0.01) of epileptic rats compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.001) and carbamazepine (p<0.001) treatment to epileptic rats significantly reversed alterations in $B_{max}$ to near control level (Fig. 17; Table- 25). There was no significant change in the $K_d$ of both the treatment groups compared to control.

Real-Time PCR analysis of NMDA2b Receptors

Real Time-PCR analysis showed that the NMDA2b receptor mRNA in cerebellum significantly up regulated (p<0.001) in epileptic rats when compared to control *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treatment to epileptic rats significantly decreased (p<0.01) NMDA2b receptor mRNA to near control (Fig. 18; Table- 26).

Real-Time PCR analysis of mGLU5 Receptors

The mGlu5 receptor mRNA was significantly up regulated (p<0.001) in cerebellum of epileptic rats compared to control and *Bacopa monnieri* treated control rats. Treatment with *Bacopa monnieri* (p<0.001) and carbamazepine treatment (p<0.01) to epileptic rats significantly reversed mGlu5 receptor mRNA alteration to near control (Fig. 19; Table- 27).
Real-Time PCR analysis of GLAST

The GLAST mRNA was significantly down regulated (p<0.001) in cerebellum of epileptic rats compared to control and Bacopa monnieri treated control rats. Bacopa monnieri (p<0.01) and carbamazepine (p<0.001) treatment to epileptic rats significantly reversed GLAST mRNA alteration to near control (Fig. 20; Table-28).

BRAINSTEM

Scatchard analysis using [³H]MK-801 against MK-801

Scatchard analysis of [³H]MK-801 against MK-801 showed a significant increase in B$_{\text{max}}$ (p<0.001) and K$_d$ (p<0.01) in brainstem of epileptic rats compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine treatment to epileptic rats significantly reversed (p<0.001) NMDA receptor B$_{\text{max}}$ alterations to near control. Bacopa monnieri (p<0.01) and carbamazepine (p<0.01) treatment to epileptic rats significantly reversed alterations in K$_d$ to near control level (Fig. 21; Table-29).

Real-Time PCR analysis of NMDA2b Receptors

Real Time-PCR analysis showed that the NMDA2b receptor mRNA in brainstem significantly up regulated (p<0.001) in epileptic rats when compared to control Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine treatment to epileptic rats significantly reversed (p<0.01) NMDA2b receptor mRNA to near control (Fig. 22; Table-30).

Real-Time PCR analysis of mGLU5 Receptors

The mGlu5 receptor mRNA was significantly up regulated (p<0.001) in brainstem of epileptic rats compared to control and Bacopa monnieri treated control rats. Treatment with Bacopa monnieri (p<0.001) and carbamazepine (p<0.01)
treatment to epileptic rats significantly reversed mGlu5 receptor mRNA alteration to near control (Fig. 23; Table- 31).

**Real-Time PCR analysis of GLAST**

The GLAST mRNA was significantly up regulated (p<0.001) in brainstem of epileptic rats compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treatment to epileptic rats significantly reversed (p<0.01) the GLAST mRNA alteration to near control (Fig. 24; Table- 32).

**IP3 content in the cerebral cortex of control and experimental groups of rats**

The IP3 content in the cerebral cortex was significantly increased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly reversed IP3 content alteration to near control level (Fig. 25; Table- 33).

**IP3 content in the hippocampus of control and experimental groups of rats**

The IP3 content in the hippocampus was significantly increased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.01) treatment to epileptic rats significantly reversed IP3 content alteration to near control level (Fig. 26; Table- 34).

**IP3 content in the cerebellum of control and experimental groups of rats**

The IP3 content in the cerebellum was significantly decreased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.01) treatment to epileptic rats significantly reversed IP3 content alteration to near control level (Fig. 27; Table- 35).
Results

**IP3 content in the brainstem of control and experimental groups of rats**

The IP3 content in the brainstem was significantly increased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly reversed IP3 content alteration to near control level (Fig. 28; Table- 36).

**cGMP content in the cerebral cortex of control and experimental groups of rats**

The cGMP content in the cerebral cortex was significantly decreased (p<0.01) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treatment to epileptic rats significantly reversed (p<0.01) the cGMP content alteration to near control level (Fig. 29; Table- 37).

**cGMP content in the hippocampus of control and experimental groups of rats**

The cGMP content in the hippocampus was significantly increased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.01) treatment to epileptic rats significantly reversed cGMP content alteration to near control level (Fig. 30; Table- 38).

**cGMP content in the cerebellum of control and experimental groups of rats**

The cGMP content in the cerebellum was significantly increased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly reversed cGMP content alteration to near control level (Fig. 31; Table- 39).
cGMP content in the brainstem of control and experimental groups of rats

The cGMP content in the brainstem was significantly increased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly reversed cGMP content alteration to near control level (Fig. 32; Table-40).

cAMP content in the cerebral cortex of control and experimental groups of rats

The cAMP content in the cerebral cortex was significantly increased (p<0.001) in epileptic rats compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.001) and carbamazepine (p<0.01) treatment to epileptic rats significantly reversed cAMP content alteration to near control level (Fig. 33; Table-41).

cAMP content in the hippocampus of control and experimental groups of rats

The cAMP content in the hippocampus was significantly increased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treatment to epileptic rats significantly reversed cAMP content alteration to near control level (Fig. 34; Table-42).

cAMP content in the cerebellum of control and experimental groups of rats

The cAMP content in the cerebellum was significantly decreased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.01) treatment to epileptic rats significantly reversed cAMP content alteration to near control level (Fig. 35; Table-43).
Results

**cAMP content in the brainstem of control and experimental groups of rats**

cAMP content in the brainstem was significantly decreased (p<0.001) in epileptic condition compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.001) and carbamazepine (p<0.001) treatment to epileptic rats significantly reversed cAMP content alteration to near control level (Fig. 36; Table-44).

**Rotarod Performance of control and experimental groups of rats**

Rotarod experiment showed a significant decrease at 10 revolutions per minute (rpm) (p<0.01), 15 rpm (p<0.001) and 25 rpm (p<0.001) in the retention time on the rotating rod in epileptic group compared to control. *Bacopa monnieri* treatment to epileptic rats significantly reversed the retention time near to control at 10(p<0.01), 15 (p<0.01) and 25 (p<0.05) rpm. Carbamazepine treatment to epileptic rats significantly reversed the retention time near to control at 10(p<0.01), 15 (p<0.001) and 25 (p<0.05) rpm (Fig. 37; Table-45).

**Elevated Plus Maze Test in the control and experimental Rats**

*Behavioural response of control and experimental rats in open and closed arm entry (counts/5 minutes) in elevated plus maze test*

The epileptic rats showed a significant increase in the number of entries made into open arm (p<0.001), closed arm (p<0.01) and total arm entry (p<0.001), compared to control and *Bacopa monnieri* treatment. *Bacopa monnieri* treatment to epileptic rats reversed the number of entries into open arm (p<0.01) closed arm (p<0.05) and total arm entry (p<0.001) to near control. Carbamazepine to epileptic rats treatment significantly decreased (p<0.05) the number of entries into open arm to near control (Table-46).
**Behavioural response of control and experimental rats in time spent (seconds/5 minutes) in open and closed arms in elevated plus maze test**

There was a significant increase in time spent in the closed arm (p<0.001) and decrease (p<0.001) in the time spent in the open arm by epileptic rats compared to control and *Bacopa monnieri* treated control rats. There was significant increase in the time spent in the open arm by *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.05) treated epileptic rats to near control. *Bacopa monnieri* and carbamazepine treatments to epileptic rats caused significant decrease (p<0.01) in time spent in the closed arm near to near control rats (Table- 47).

Percentage of time spent in open arm showed a significant decrease in epileptic (p<0.001) rats compared to control. *Bacopa monnieri* and carbamazepine treatments to epileptic rats caused significant increase (p<0.01) in time spent in the closed arm near to near control rats and *Bacopa monnieri* treated control rats (Table- 47).

**Behavioural response of control and experimental rats in head dipping attempts, stretched attend posture and grooming attempts in elevated plus- maze test**

There was a significant decrease in head dipping (p<0.01), stretched attend posture (p<0.001) and grooming attempts (p<0.001) in epileptic rats compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treatment to epileptic rats caused a significant increase (p<0.05) in head dipping attempt, stretched attend posture and grooming attempts to control (Table- 48).
Social Interaction Test in the control and experimental rats

**Behavioral response of control and experimental rats at allogrooming, sniffing, aggressive attacks and following the partner in Social Interaction Test (Counts/10 minutes)**

There was a significant decrease in the attempts in allogrooming (p<0.001), sniffing (p<0.01) and following (p<0.05) the partner by epileptic rats compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* treatment to epileptic rats caused a significant increase in the attempts at allogrooming (p<0.05), sniffing (p<0.05) and following (p<0.01) near to control rats. Carbamazepine treatment to epileptic rats caused a significant increase in the attempts at allogrooming (p<0.05), sniffing (p<0.05) and following (p<0.01) near to control rats. No aggressive attacks were observed in control and experimental groups of rats (Table-49).

**Behavioral response of control and experimental rats in time spent in social interaction test (seconds/10 minutes)**

There was a significant decrease (p<0.001) in total time spent in social interaction and increase in time spent without social interaction (p<0.001) by epileptic rats compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.001) treatment to epileptic rats caused a significant increase in the time spent social interaction compared to epileptic rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.001) treatment to epileptic rats significantly decreased the time spent without social interaction compared to epileptic rats (Table-50).

**Behavioural response of control and experimental rats in Forced Swim Test**

There was a significant increase (p<0.001) in the immobility period and significant decrease (p<0.001) in mobile period spent in forced swim test by epileptic
rats compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treatment to epileptic rats caused a significant increase (p<0.01) in the mobile period compared to epileptic rats. *Bacopa monnieri* (p<0.01) and carbamazepine (p<0.001) treatment to epileptic rats also significantly decreased the immobile period compared to epileptic rats (Table- 51).

**CONFOCAL STUDIES**

**Cerebral Cortex**

**5-HT\textsubscript{2c} receptor antibody staining in control and experimental groups of rats**

The 5-HT\textsubscript{2c} receptor antibody staining in the cerebral cortex showed an increase in the 5-HT\textsubscript{2c} receptor in epileptic rat compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treated epileptic rats showed a reversal of the increase in 5-HT\textsubscript{2c} receptor staining in the cerebral cortex compared to epileptic rats. (Fig. 38; Table- 52).

**NMAD2b receptor antibody staining in control and experimental groups of rats**

The NMAD2b receptor antibody staining in the cerebral cortex showed a decrease in the NMAD2b receptor in epileptic rat compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treated epileptic rats showed a reversal in decreased NMAD2b receptor staining in the cerebral cortex compared to epileptic rats. (Fig. 39; Table- 53).

**mGlu5 receptor antibody staining in control and experimental groups of rats**

The mGlu5 receptor antibody staining in the cerebral cortex showed an increase in the 5-HT\textsubscript{2c} receptor in epileptic rat compared to control and *Bacopa monnieri* treated control rats. *Bacopa monnieri* and carbamazepine treated epileptic
Results

Rats showed a reversal of the mGlu5 receptor staining in the cerebral cortex compared to epileptic rats. (Fig. 40; Table- 54).

Cerebellum

5-HT$_{2C}$ receptor antibody staining in control and experimental groups of rats

The 5-HT$_{2C}$ receptor antibody staining in the cerebellum showed an increase in the 5-HT$_{2C}$ receptor in epileptic rat compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine treated epileptic rats showed a reversal in increased 5-HT$_{2C}$ receptor staining in the cerebral cortex compared to epileptic rats. (Fig. 41; Table- 55).

NMAD2b receptor antibody staining in control and experimental groups of rats

The NMAD2b receptor antibody staining in the cerebellum showed a decrease in the NMAD2b receptor in epileptic rat compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine treated epileptic rats showed a reversal in decreased NMAD2b receptor staining in the cerebral cortex compared to epileptic rats. (Fig. 42; Table- 56).

mGlu5 receptor antibody staining in control and experimental groups of rats

The mGlu5 receptor antibody staining in the cerebellum showed an increase in the 5-HT$_{2C}$ receptor in epileptic rat compared to control and Bacopa monnieri treated control rats. Bacopa monnieri and carbamazepine treated epileptic rats showed a reversal in increased mGlu5 receptor staining in the cerebral cortex compared to epileptic rats. (Fig. 43; Table- 57).