

Simvastatin Improves Spatial Reference Memory in APP2576 Transgenic Mice

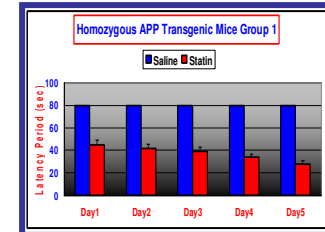
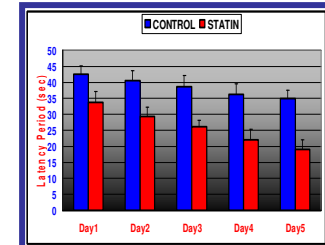
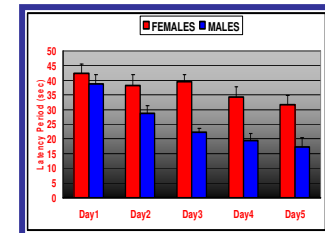
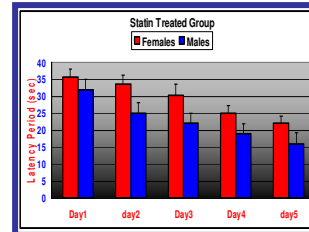
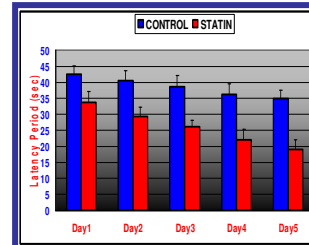
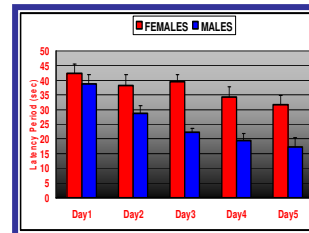
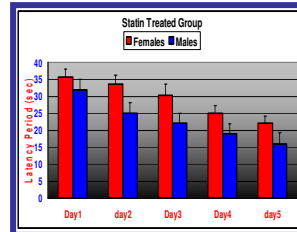
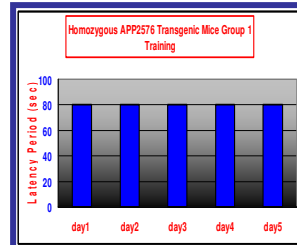
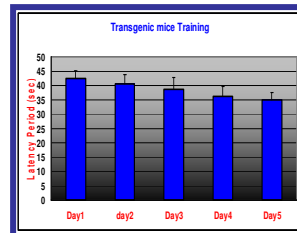
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Introduction

Evidence has been presented to suggest that there is a strong relationship between the deterioration of brain cholesterol homeostasis and memory deficits. The objective of the present study is to elucidate the effects of statin on spatial reference memory in mice carrying the gene for amyloid protein. Transgenic mice APP 2576 homozygous (carrying the gene for beta amyloid protein) and wild type (control) were used in these experiments. Spatial reference memory was assessed using the Morris Water Maze. Results obtained indicate that APP 2576 homozygous mice receiving saline were unable to find the platform during the maximum allowable time (latency period of 80 seconds). However, the latency period to find the platform was significantly reduced ($P < 0.001$) in the statin treated groups as compared to those receiving saline. The decrease in latency period following statin administration was more pronounced in the APP 2576 homozygous mice as compared to the wild type (64.3% and 45.5% decline respectively). These findings clearly indicate that simvastatin significantly improves spatial reference memory in mice carrying the gene for amyloid protein.

Materials and Methods

- Transgenic mice APP 2576 (n=24) were divided into 4 groups: wild type receiving statin (10mg/kg ip for 7 days), wild type receiving saline, homozygous type receiving statin (10mg/kg ip for 7 days) and homozygous receiving saline.
- Animals were acclimatized for one week under constant temperature and light before experimentation. Food and water were provided ad libitum.
- Training for spatial reference memory began on day one of treatment, and continued for 5 executive days.
- Statin treated animals were evaluated for the maze performance on day 7.



Conclusion

- Simvastatin effects on the spatial reference memory in APP 2576 transgenic mice (Alzheimer's model) was statistically significant at $P < 0.0001$.
- Simvastatin significantly improves spatial reference memory in the wild type APP 2576 transgenic mice
- The difference in the latency period was statistically significant between males and females at $P < 0.0001$. These findings suggest that the males wild type are learning the location of the platform faster than the females.
- Simvastatin beneficial effects are more pronounced in males than in females