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Original Article

Effect of taurine and caffeine on spatial memory in adult male wistar rats

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ABSTRACT

There is an increase in the production and consumption of caffeine and taurine beverages tagged as energy drinks. This study was therefore undertaken to investigate the effect of co-administration of caffeine and taurine on memory in Wistar rats. Fifty-four adult Wistar rats were divided into nine groups of six animals and treatments were as follows: Group 1 (10 ml/kg normal saline), Group 2 (100 mg/kg taurine), Group 3 (200 mg/kg taurine), Group 4 (taurine plus furosemide; 20 mg/kg), Group 5 (taurine plus nifedipine; 10 mg/kg), Group 6 (taurine plus caffeine), Group 7 (7.5 mg/kg caffeine), Group 8 (15 mg/kg caffeine) and Group 9 (taurine plus nifedipine plus furosemide plus caffeine). Treatment was once daily for 21 days, after which long term spatial memory of pretreatment training in Morris Water Maze was tested. Histological study was done using haematoxylin and eosin stains on hippocampus tissues harvested from the brain of one animal in each group. The results showed that there was a significant ($p<0.05$) decrease in time taken to find and mount the escape platform compared with the control. This was with the exception of the group co-treated with caffeine and taurine. Histological studies showed normal cell morphology, arrangement and distribution in the hippocampus. There was increased in the number of cells in the hippocampus of the animals given taurine (200 mg/kg) plus caffeine (15 mg/kg), and caffeine (15 mg/kg). In conclusion, at the doses used, co-administration of caffeine and taurine has no significant effects on spatial memory, however the separate use of caffeine or taurine proved to have capacity to enhance spatial memory.

Keywords: Caffeine, Taurine, Memory, Hippocampus, Rats