

**Original Article**

**Ameliorative effects of taurine and caffeine on spatial memory deficit associated with neuropathic pain in sciatic nerve ligated rats**

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**ABSTRACT**

Despite several clinical studies which showed that majority of chronic pain sufferers have impaired spatial memory, yet, this remains an area of unmet therapeutic need. In this study, we tested whether effect of concurrent administration of taurine and caffeine could restore the spatial memory impairment induced by neuropathic pain. Rats were rendered neuropathic by unilateral sciatic nerve ligation and treated with taurine and caffeine (taurine (200 mg/kg b.w., i.p.) + caffeine (7.5 mg/kg b.w., i.p.) and taurine (200 mg/kg b.w., i.p.) + caffeine (15 mg/kg b.w., i.p.). After 2 weeks of administration, the spatial memory was assessed using Y-maze paradigm. The numbers of entries and percentage alternations over a ten minute period was scored for each animal as a measure of spatial memory. Thereafter the animals were sacrificed and blood samples were collected for the estimation of serum C-reactive protein (CRP), a pro-inflammatory marker. Administration of taurine and caffeine ameliorated spatial memory impairment induced by neuropathic pain as percentage alternation increased significantly ( $P < 0.05$ ) in the groups that received both taurine and caffeine in a dose-dependent manner compared to the ligated control group but there was no significant effect on the locomotor activities as shown by the arm entries. There was also a significant ( $P < 0.05$ ) decrease in the serum CRP level in the groups that were treated with taurine alone as well as taurine and caffeine compared to the ligated control group. It can be concluded that administration of taurine and caffeine ameliorated the spatial memory impairment induced by neuropathic pain.

Keywords: Caffeine, C-reactive protein, neuropathic pain, memory impairment, rats, taurine