

## Original Paper

# The evaluation of morphine based CPP on the astrocytes of male Rat's dentate gyrus

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## Abstract

**Background and Objective:** Morphological alterations of hippocampus and dentate gyrus due to opium were reported in humans and animals. Also other evidences have shown that astrocytes actively participate in synaptic plasticity. This study was done to determine the conditioning place preference (CPP) on astrocytes number of Rat dentate gyrus by immunohistochemical technique.

**Materials and Methods:** In this experimental study, 48 male Wistar Rat weighted average 220-250 g were used. For behavioural tests, Rats divided into eight experimental groups. The Rats were received morphine at different doses (2.5, 5, 7.5 mg/kg) for three days by subcutaneous injection and sham groups, received saline dose (1 mg/kg) and then CPP test in them were investigated. 48 hours after behavioural testing animals were decapitated under chloroform anesthesia and their brains fixed and after tissue processing, slices stained with immunohistochemistry techniques. For morphometric study PTAH staining of astrocytes was used.

**Results:** The most dose responses of morphine was observed in 7.5mg/kg. The number of astrocytes in the controls (20.627±6.129) was similar to control-saline group (17.339±4.71). This difference was not significant, while the difference in the number of astrocytes in control group with morphine-treated experimental groups was significant (P<0.05).

**Conclusion:** We concluded that the phenomenon of conditioned place preference induced by morphine can cause a significant increase in the number of astrocytes of sham and experimental groups compared to controls.

**Keywords:** Conditioning place preference, Morphine, Immunohistochemistry, Astrocytes, Dentate gyrus, Rats

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