Morphological changes in hippocampus CA1 neurons after nicotine administration in rats

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Abstract

**Background:** Previous studies have shown morphological changes after intra peritoneal drug administration in human and animals. This study examines the effect of intrapretoneal nicotine administration on pyramidal neurons in area CA1 of hippocampus.

**Methods:** The study included male Wistar rats with the mean weigh of 220-250 g. Nicotine was administered at a dose of 0.4 and 1.5 mg/kg, each for a period of three days. The animals were then anesthetized using ketamine (70 mg/kg). After being fixed through transcardiac canula with formalin 4% and bafer phosphate 6, the brains were sectioned and stained using Golgi’s staining technique. Using MOTIC software, they were then examined for histological evaluations. Data were analyzed using unpaired test.

**Results:** Our results showed a decrease in the size and the number of pyramidal cells in area CA1 of hippocampus for the nicotine group. While the number of dendrites was fewer in experimental group, astrocytes had increased in comparison to the control group.

**Conclusion:** Our study indicates that nicotine administration results in a significant reduction in the size of pyramidal cells in area CA1 of hippocampus.

**Keywords:** Nicotine, CA1 area, Pyramidal cells, Rat


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