REDUCTION OF HIPPOCAMPAL NEURONS FOLLOWING CHRONIC NICOTINE ADMINISTRATION
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Objective
The aim of the present study was to examine the effects of chronic nicotine administration on the neuronal numbers of the hippocampus, a spatial memory related brain structure.

Method
Twelve male adult Sprague-Dawley rats, subdivided into nicotine-treated groups (NIC, n=6) and control (SAL, n=6), were intramuscularly injected with 0.5mg/100g nicotine and 0.1ml/100g per body weight saline, respectively. After 100 days, the rats were sacrificed and brain tissues were harvested for neurohistological processes. Six Cresyl Violet stained dorsal hippocampal transverse sections (10μm thick) of both hemispheres were randomly sampled for neuronal cell count. In each of the hippocampal region, only neuronal somas with whole evident visible nucleus and nucleolus were counted.

Results & Discussion
NIC-treated group exhibited significantly lower neuron numbers in CA1 and CA3 hippocampal regions as compared to control. The number of neurons in DH region was also lower for NIC-treated group. In addition, hippocampal CA1 and CA3 regions were significantly affected by the treatments, as compared to DH region. Notably, CA1 and CA3 hippocampal regions have been established to play functional roles in encoding spatial information.

Conclusion
These findings demonstrated that chronic nicotine administration caused a decrease in the hippocampal neuronal numbers, correlating its effects towards spatial memory impairment.