Original Paper

Effect of *Cannabis sativa* alcoholic extract on hippocampus neuronal density in Rats

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Abstract

Background and Objective: Memory is an especial ability of brain in which saves the information and reuptake it. The memory is depended on hippocampus and amigdal. The neuronal density of hippocampus and amigdal have direct effect on their physiological functions. *Cannabis sativa* is belongs to *Cannabinaceae* family that Tetrahidrocanabinol is important component of this plant. The aim of this study was to assess the effect of alcoholic extract of *Cannabis sativa* on CA1, CA2 and CA3 subfeilds of hippocampus neuronal density in male Rats.

Materials and Methods: This experimental study was performed on 18 male Rats with (250-320gr) weight and 3 month old in faculty of science, Islamic Azad University of Mashhad, Iran (2010-2011). At first the alcoholic extraction was provided by the soxhlet method of the seed of this plant with coded 2548. Eighteen male wistar Rats were allocated into 2 experimental groups (25,75mg/kg of alcoholic extract of *Cannabis sativa*) and one control group. Alcoholic extract of *Cannabis sativa* was injected intraperitonealy (I.P.) in experimental groups for two weeks (every week one injection). After four weeks animal was decapitated and their brain dissected, fixed in 10% formalin, sectioned in 7µm thickness and stained by toluidin blue. By applying stereological techniques and systematic random sampling scheme the neuronal density of hippocampus were estimated.

Results: Neuronal density in control and treated with alcoholic extract (25,75mg\kg) CA1 was 17982, 26750 and 22801 respectively. Neuronal density in CA2 was 19171, 26750 and 22801 respectively and also in CA3 was 19391, 24043, 28571 respectively. Neuronal density in CA1, CA2 and CA3 of hippocampus in treated groups with alcoholic extract (25,75mg\kg) was significantly increased in comparision with controls ($P<0.01$).

Conclusion: This study determined that the alcoholic extract of *Cannabis sativa* can induce hippocampus neurogenesis which is not dose depended.

Keywords: Hippocampus, *Cannabis sativa*, Alcoholic extract, Neurogeneses

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