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Background and Aim: Introduction: Tetrahydrocannabinolic acid (THCA) and Cannabidiolic acid (CBDA) are two major decarboxylated cannabinoid found in hydroalcoholic extract of female *Cannabis sativa* flowers, heating change them to Tetrahydrocannabinol (THC) and Cannabidiol (CBD) respectively, chemicals that are able to activate the endocannabinoid system. This investigation is to find out the effects of the central or intrathecal administration (i.t.) of the plant heated extract on the inflammatory paw edema in rat.

Methods: Material and methods: The adult male Wistar rats (250-300 g) initially were subjected to i.t. surgery as 8cm of PE-10 cannula was inserted into the spinal subarachnoid space. Groups (n=7) were included: control, sham (salin+tween+ethanol, i.t.) and plant extract treatment (0.01mg/10 μ l, i.t.). 5 min after i.t. administration, before and one hour after 0.05 ml injection of formalin 2/5% in the sub plantar region of hind paw, edema volume were recorded using plethysmometer.

Results: Results: Hydroalcoholic extracts of heated flowers could significantly reduce formalin-induced paw edema ($p < 0.05$).

Conclusion: Conclusion: Carboxylated cannabinoid such as THC and CBD are probably present in the extract which probably elevate the level of central endocannabinoids, especially Anandamide, may be by inhibition of their reabsorption and degrading enzymes. All these can suppress inflammatory paw edema by inhibition at the level of spinal cord; these assumptions are needed to investigate more.

Keywords: THC, CBD, Edema, inflammation, intrathecal administration.

Heated female cannabis sativa flowers hydroalcoholic extract effects on thermal and chemical pain at the level of spinal cord

Subject: Pain

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Background and Aim: Introduction: Pain is a feeling that produces unpleasant experience along with tissue damage. Cannabinoids are compounds, found endogenous in the body, in plant and synthetic types and exert different effects on body via activation of endocannabinoid system. Flower of female cannabis

sativa have the largest amount of cannabinoids. This research is to investigate the effects of intrathecal injection of female cannabis flowers hydroalcoholic extract on thermal and chemical pain.

Methods: Material and methods: 50 grams of dried flowers were extracted after heating. 21 rats weighing 200-250 grams were categorized in 3 groups (n=7): control, sham (i.t. injection of solvent containing ethanol+Tween80+salin with respects of 1/1/8) and i.t. injection of the extract in 0.01mg/10µl. In order to investigate the chemical pain sensation, formalin test and to evaluate thermal pain threshold, Tail flick test were conducted.

Results: Results: I.t. injection of hydroalcoholic extract of heated flowers could significantly decrease both the neurogenic and inflammatory phases of pain caused by formalin injection. (p<0.01, p<0.01 respectively). But has no reliable decreasing effect on threshold of thermal pain.

Conclusion: Conclusion: Heating makes phytocannabinoid to become decarboxylated and this form is usually known as active form. These compounds have high affinity to CB1 and TRPV1 receptors which are present on the neurons in the dorsal root of spinal cord. May be the plant extract Carboxylated cannabinoids here, inhibit release of nervous mediators effective in pain such as Glutamate via connecting to CB1 receptors at the level of spinal cord. It is possible that activation of CB1 modulates TRPV1 activity here to diminish the chemical pain conduction.

Keywords: Keywords: Pain, Formalin test, Tail flick, Cannabis sativa

Protective effects of Melatonin against Methamphetamine induced apoptosis, oxidative stress and inflammation in rat isolated hippocampus via Modulation of NF-KB protein expression

Subject: Neurodegeneration, and Movement Disorders

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Background and Aim: Usage of Melatonin for management of oxidative stress, neuro-inflammation and attenuation of apoptosis has been developed in recent years. This hormone has been found to prevent cell death and neurodegeneration but the mechanism of its effect was not clarified precisely. On the other way it was approved that abuse of Methamphetamine can induce apoptosis and cause inflammation and oxidative stress damage of brain cells. NF-κB (nuclear factor kappa) plays as a therapeutic target in neurodegenerative disorder. In this study effect of Melatonin against Methamphetamine induced inflammation, oxidative stress and apoptosis in rat hippocampus was evaluated. Also the role of NF-κB in Methamphetamine induces neurodegeneration and its function in Melatonin neuro-protective effect was investigated.