Summary of the DVM thesis No15167, Faculty of Veterinary Medicine, Urmia University.

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Title of thesis: **The effect of oxytocin and its antagonist microinjections into the medial prefrontal cortex on neuropathic pain induced by transection of tibial and peroneal branches of sciatic nerve in rats: roles of opioid and cannabinoid systems**

Summary: Oxytocin containing neurons of the paraventricular nucleus send projections to many regions within the brain, in which oxytocin modulate various brain functions including pain perception. In addition, the distribution of oxytocin receptors in medial prefrontal cortex (mPFC) was documented. In the present study, effects of intra-mPFC administration of oxytocin on the mechanical allodynia was evaluated. In addition, the possible mechanism was investigated using L-368,889, naloxone, and AM-251 (oxytocin, opioid, and CB1 cannabinoid receptors antagonists). On day 1 spared nerve injury (SNI) surgery (complete transections of the tibial and peroneal branches of the sciatic nerve) was performed. On the 7th day of the study, guide cannulas were implanted on the right and left sides of the mPFC. On the 14th day of the study, after microinjection of the drugs, changes in 50% paw withdrawal threshold (PWT 50%) to von Frey filaments were recorded. Microinjection of oxytocin (5 and 10 ng) into the medial prefrontal cortex decreased mechanical allodynia by increasing the (PWT 50%). The anti-allodynic effect of oxytocin was inhibited by prior microinjection of L-368,899 (20 ng/site), naloxone (100 ng/site) and AM251 (100 ng/site). Our results indicated that mPFC oxytocin system involved in pain modulation. Oxytocin, cannabinoid, and opioid receptors possibly participated in this process.

Keywords: Oxytocin, Medial prefrontal cortex, Spared Nerve Injury, Rats.