

## **TDCS NEUROMODULATORY EFFECTS ON ALLODYNIA AND CORTICAL BDNF LEVELS IN OVARECTOMIZED RATS**

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**Introduction:** Menopause is a physiological process characterized by the loss of ovarian follicular activity and consequent decline on sex steroids levels. As currently women have an increase on life expectancy, they spend a significant part of their lives in hypoestrogenic state of the postmenopause. Estrogens are known to interact with neurotransmitters and neurotrophins such as brain derived neurotrophic factor (BDNF).

The transcranial direct current stimulation (tDCS) is a relatively safe and low cost brain stimulation technique that has been tested in the treatment of chronic pain. Objective: The present investigation aims to explore the effect of tDCS on pain behavior and peripheral and central BDNF levels in ovariectomized rats. **Materials and methods:** Female Wistar adult rats were randomized by weight and distributed into five groups: control (CT), ovariectomy + tDCS (OT), ovariectomy + sham tDCS (OS), sham ovariectomy + tDCS (ST) and sham ovariectomy + sham tDCS (SS). Rats were subjected to cathodal tDCS. Hormonal status was verified by vaginal cytology and

estradiol levels. Additionally we evaluated: tail flick test, electronic von Frey test, hot plate test and hypothalamic, hippocampal, spinal cord, cortical and serum BDNF levels.

**Results:** It was observed significant effect of ovariectomy in hot plate and von Frey tests, and in serum and hypothalamic BDNF levels. Hippocampal BDNF levels were significantly decreased in OT, OS, ST and SS groups as compared to control group. There was interaction between the effects of tDCS and ovariectomy in cortical BDNF levels. **Conclusion:** Moreover, cathodal tDCS reversed partially nociceptive hypersensitivity induced by ovariectomy. These data are consistent with the scientific evidence about neuromodulatory effect of estrogen and tDCS on nociception and BDNF.