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Effects of intraperitoneal administration of Lavender (*Lavandula angustifolia*) flowers and branches hydroalcoholic extract on neuropathic pain induced by chronic constriction injury on male Wistar Rat

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Background and Aim : Neuropathic pain is a chronic pain caused by damage to the peripheral or central nerves. In diseases where the patient has nerve damage, symptoms of neuropathic pain are observed. Therefore, treatment and reduction of its associated symptoms is so important. Steroidal anti-inflammatory drugs and painkillers that work through opioid pathways either lack effect or cause drug resistance after a while. Lavender has high levels of antioxidants and Linalool. It can be thought of as being able to reduce the effects of CCI surgery on neuropathic pain.

Methods : The present study was performed on 35 male rats in 5 groups of 7 each weighing 200-250 g. Neuropathic pain was induced by CCI model by partial occlusion of the sciatic nerve. Experimental groups were divided into control group with sciatic nerve surgery without treatment, physiological saline (Lavender extract solvent) group for 14 days after surgery and Chronic recipient groups of hydroalcoholic lavender extract at doses of 100, 200,400 mg/kg for 14 days after surgery. Mechanical pain tests included Von Frey and Pin Prick and thermal pain tests included hot plate and acetone tests performed on days zero (before surgery) and days 3,7, 14, 21, 28.

Results : Results showed that chronic intraperitoneal injection of hydroalcoholic lavender extract at doses of 100, 200,400 mg/kg in all three doses reduced thermal allodynia ($P < 0.0005$) and at doses of 200 and 400 mg/kg reduced hyperalgesia. It also reduced mechanical allodynia ($P < 0.006$) and mechanical hyperalgesia ($P < 0.01$) at doses of 200 and 400 mg/kg

Conclusion : Studies have shown that lavender has high levels of vitamin C and other antioxidants, which may reduce ROS, increase levels of antioxidant enzymes such as superoxide dismutase, glutathione peroxidase and catalase. It inhibits nitric oxide synthesis. Lavender contains Linalool, which is an antagonist of NMDA receptors and may reduce neuropathic pain by inhibiting the activity of these channels. Previous studies have also shown that lavender can reduce inflammation, so a specific study of the proposed mechanisms of how this plant extract works in reducing pain in this study may be worth further consideration

Keywords : neuropathic pain, lavender, intraperitoneal injection, hyperalgesia, allodynia, rat.