



## **Mygalin as a treatment of chronic pain on a rat diabetic neuropathic model**

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### **ABSTRACT**

Diabetes mellitus (DM) is one of the main diseases that affect the entire world and approximately more than 463 million people suffer from this disease. Type 1 DM can develop complications such as nerve damage and micro/macrovacular alterations known as diabetic neuropathy (DN). The present study evaluated the effect of microinjection of the synthetic polyamine migalin in the dorsomedial periaqueductal gray matter (PAGdm) on chronic neuropathic pain in Wistar rats with streptozotocin-induced DM (STZ). DM was induced in rats with intraperitoneal STZ, with a single dose of 60 mg/kg, after which the animals' weight and blood glucose were monitored, in addition to their development of DN, applying mechanical allodynia tests with von frey and cold with the acetone test. Up to 28 days of DM induction, microinjection of mygalin (0.002 µg/µL, 0.02 µg/µL and 0.2 µg/µL) in the PAGdm was performed. Animals treated with STZ showed

increased glycemia from 48h after induction and remaining during the study period. Weight loss was observed on day 7 and continued until day 28. Animals treated with STZ showed greater aversive responses than the control group with the mechanical test, and when treated with migalin (0.002  $\mu\text{g}/\mu\text{L}$ , 0.02  $\mu\text{g}/\mu\text{L}$  and 0.2  $\mu\text{g}/\mu\text{L}$ ) the response decreased at times 15, 30 and 45 minutes, and the highest dose 0.2  $\mu\text{g}/\mu\text{L}$  was prolonged up to 90 minutes. In the acetone test, the neuropathic groups showed altered responses, however, when the treated groups were administered with migaline, it showed improvement at times 5, 15 and 30 minutes and only the highest dose 0.2  $\mu\text{g}/\mu\text{L}$  reached 45 minutes. The results suggest that mygalin applied to PAGdm has analgesic potential and may be useful in the treatment of DN.

**Keywords:** Dorsomedial Periaqueductal Gray Substance; Mygalin; Diabetic neuropathy; Pain.