

## **Effects of pregabalin and duloxetine on neurotransmitters in the dorsal horn of the spinal cord in a rat model of fibromyalgia.**

[Kiso T](#)<sup>1</sup>, [Moriyama A](#)<sup>2</sup>, [Furutani M](#)<sup>2</sup>, [Matsuda R](#)<sup>3</sup>, [Funatsu Y](#)<sup>3</sup>.

### **Abstract**

Dysfunction of the monoamine systems in the nervous system is associated with the clinical symptoms of fibromyalgia. Reserpine-induced myalgia (RIM) rats are a putative model of fibromyalgia in which muscle pressure thresholds and monoamine content is reduced in the brain and spinal cord. We examined the effects of pregabalin and duloxetine, drugs approved for fibromyalgia treatment, on the levels of extracellular neurotransmitters in the dorsal horn of the spinal cord in RIM rats using microdialysis. Male SD rats were used for all experiments. To generate RIM rats, reserpine was injected at 1 mg/kg subcutaneously once daily for three consecutive days. The pressure threshold of the mid-gastrocnemius muscle was measured using a Randall-Selitto apparatus. Norepinephrine, dopamine, and serotonin were detected using high-performance liquid chromatography with electrochemical detection, and glutamate and  $\gamma$ -aminobutyric acid (GABA) were detected using liquid chromatography-mass spectrometry. The muscle pressure threshold in RIM rats was significantly lower than that in normal rats. While the levels of monoamines and glutamate were lower in the spinal cord of RIM rats than in normal rats, levels of GABA did not markedly differ. Duloxetine increased the levels of all three monoamines in normal and RIM rats in a dose-dependent manner. In contrast, pregabalin only increased norepinephrine levels in RIM rats. These results indicate that while both pregabalin and duloxetine ameliorate muscle pressure thresholds in RIM rats, their effects on the levels of extracellular neurotransmitters in the spinal cord differ considerably.