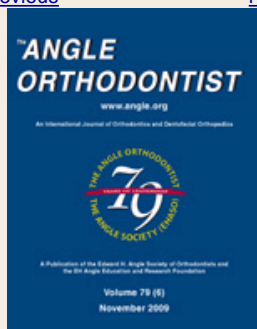


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Original Article

## Effect of Celecoxib on Emotional Stress and Pain-Related Behaviors Evoked by Experimental Tooth Movement in the Rat

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### Abstract

**Objective:** To test the efficacy of an animal model of pain and stress and evaluate the effects of celecoxib administered when orthodontic force is applied.

**Materials and Methods:** A 20-g reciprocal force was applied via an orthodontic appliance to the maxillary left first and second molars of 7-week-old male Sprague-Dawley rats. Rat behavior was evaluated at 5, 24, and 48 hours after the appliance was set. Behavior was assessed in a test field by the number of lines crossed in the first 30 seconds and 5 minutes following force application; number of lines crossed to the center; rearing time; and facial grooming time. Experimental group 1 received intraperitoneal administration of 30 mg/kg celecoxib before every behavioral test. Experimental group 2 received 90 mg/kg before the first behavioral test, and physiologic saline was administered before the remaining behavioral tests. Control groups received saline before every behavioral test and were given passive (passive control group) and active (active control group) appliances, respectively.

**Results:** Parameters related to pain increased in the active controls, whereas the parameters in the experimental groups decreased to the level seen in the passive controls. Statistically significant differences in pain-related behavior between control and experimental groups were found at 5 and 24 hours after placing the appliance. Stress-related behavior was significantly less in the experimental groups compared to the active control group during experimental periods.

**Conclusions:** The administration of celecoxib relieves pain- and stress-related behavior evoked by orthodontic tooth movement in the rat. This model might be a useful tool for the evaluation of pain and stress.

**Keywords:** [Pain](#), [Celecoxib](#), [Tooth movement](#), [Behavior](#)

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