**Abstract:**

Inflammation plays an important role in initiating and maintaining painful conditions, yet periodontitis, a disease of the tissues that support the teeth, is characterized by inflammation and infection, and typically presents without pain. Those affected by periodontitis show a high prevalence of porphyromonas gingivalis (PG), a gram-negative rod-shaped anaerobe. The objective of this study was to assess the effect of PG lipopolysaccharide (LPS) on acute pain induced in rats and to assess its effects on the levels of pro-inflammatory cytokines IL-1β and IL-6, and anti-inflammatory cytokine IL-10. The Brennan model of incisional pain was used to induce acute pain in the hind paw. Twenty-four hours following surgery, the rats were divided into 5 groups and the affected paws were injected with 0.2 ml of one of three commercialized forms PG LPS doses (high - 1mg/ml, medium - 0.6 mg/ml and low - 0.2mg/ml), diclofenac sodium (1mg/kg), or saline. Tactile allodynia, mechanical hyperalgesia, body temperature and paw swelling were assessed at baseline, before and 2 hours following paw injection. The affected and contralateral paw skin was assessed for the above mentioned cytokines levels employing the enzyme-linked immunosorbent assay (ELISA). The high PG LPS dose and diclofenac significantly reduced the tactile allodynia and mechanical hyperalgesia. Furthermore, the high PG high dose significantly increased IL-10 levels while diclofenac significantly reduced IL-1β levels. The LPS administration had no effect on paw swelling and did not increase body temperature. Our findings suggest that PG LPS local application may possess anti-nociceptive properties, mediated in part by an increase in IL-10 levels.