Leptin thought to play a key role in control of satiety, food intake, and is part of the cytokine cascade, which orchestrates the immunoregulation. The leptin found decreased in inflamed gingiva. This study aims to investigate leptin (OB) and soluble OB receptor (s-OB-R) concentrations in serum and gingiva in individuals with different periodontal diseases; whether correlations exist between clinical parameters and OB and s-OB-R; and whether gingiva is the origin of OB and s-OB-R. Twenty healthy, 20 gingivitis, 16 aggressive periodontitis and 21 chronic periodontitis subjects included to this study. After the clinical periodontal parameter recordings, gingival tissue obtained from the most inflamed gingiva of the periodontally diseased and healthy gingiva of the periodontally healthy individuals. The fasting venous blood obtained. Serum OB and s-OB-R determined using ELISA, in gingiva using immunohistochemical methods. Serum OB concentration present any significant differences among the groups (\( P > 0.0125 \)); only significant difference in serum s-OB-R found between the healthy and gingivitis groups (\( P < 0.0125 \)). Gingival
OB and s-OB-R evaluations revealed any differences among the groups. However, gingival epithelium and endothelium showed positive immunoreactivity. The results revealed that OB and s-OB-R playing roles in periodontal pathogenesis. Leptin may be acting as an anti-inflammatory cytokine in periodontal disease.