BACKGROUND: Curcumin has anti-inflammatory and antioxidant effects and is reported to have many biologic activities. The current study examines effect of curcumin on: 1) systemic T helper 17 (Th17) cell response; 2) gingival expressions of interleukin (IL)-17 and retinoic acid receptor-related orphan receptor (ROR) ?t; and 3) alveolar bone loss (ABL) in experimental periodontitis. METHODS: Thirty-eight male albino Wistar rats were divided into four groups: 1) group 1 = periodontitis; 2) group 2 = periodontitis with curcumin treatment; 3) group 3 = periodontally healthy with curcumin treatment; and 4) group 4 = periodontally healthy. Curcumin was administered via oral gavage (30 mg/kg/d) for 15 days. After sacrifice via exsanguination, the following serum levels were determined using enzyme-linked immunosorbent assay: 1) IL-1ß; 2) IL-6; 3) IL-17A; 4) IL-23; and 5) transforming growth factor-ß. Morphometric evaluation of ABL was conducted and expression levels of IL-17 and ROR?t in gingival tissues were evaluated immunohistochemically. RESULTS: Group 2 had significantly lower ABL than group 1 (P <0.0125). Highest expression levels of IL-17 and ROR?t were observed in group 1 and were significantly higher than those in all other groups (P <0.0125). The only serum biochemical parameter significantly different among groups was level of IL-23 (P <0.05). Serum IL-23 levels were higher in groups 1 and 2 than groups 3 and 4 (P <0.0125); however, they were not significantly different for groups 1 and 2 (P >0.0125). CONCLUSION: Curcumin seems to be a promising host modulatory agent in periodontal disease pathogenesis regarding IL-17/IL-23 axis, with a decreasing effect on ABL and gingival expressions of IL-17 and ROR?t. KEYWORDS: Alveolar bone loss; Th17; curcumin; interleukin-17; interleukin-23; periodontitis