Objectives: Bisphosphonates (BPs) are used commonly for treatment of different disease as cancer. But, there is a little knowledge about the negative effects of bisphosphonates on tissue regeneration and interleukin expression of the oral mucosa after traumas. Some reports are available about ameliorative effect of basic fibroblast growth factor (bFGF) on wound healing after tooth extraction. The aim of this study was to evaluate the effects of zoledronic acid (ZOL) and basic fibroblast growth factor on soft tissue healing immunohistochemically expression of the IL-3 and IL-8 at the tooth extraction area. Biochemical level of basic fibroblast growth factor was also evaluated for clarifying cate etiology of bisphosphonate related osteonecrosis of the jaws.

Study Design: A randomized, controlled trial using male Sprague–Dawley rats was developed. The effects of zoledronic acid and basic fibroblast growth factor on soft tissue healing histopathologically and expression of IL-3 and IL-8 were examined immunohistochemically following tooth extraction. Serum basic fibroblast growth factor was analyzed biochemically after first zoledronic acid injection. Data were analyzed using the Tukey, Mann–Whitney U, Kruskal–Wallis and Wilcoxon tests.

Results: ZOL decreased the expressions of IL-3, IL-8 and serum bFGF level in treated rats and bFGF treatment significantly ameliorated the negative effects of ZOL on ILs.

Conclusions: This study showed that ZOL decreased healing and IL expressions, while bFGF reversed this negative effect of ZOL.