Sickle cell disease (SCD) is a chronic inflammatory disease in which vaso-occlusive crisis and endothelial dysfunction are present. YKL-40, a new acute phase protein, is shown to be elevated in inflammatory diseases such as rheumatoid arthritis, type 2 diabetes mellitus, coronary artery diseases and periodontal diseases. The aim of this study was to investigate the relationship between salivary cytokine and serum YKL-40 levels in children with SCD.

Forty-three children with SCD and 43 healthy children were included in the study. Physical, dental and periodontal statuses were examined, and blood and saliva samples were taken. Serum high sensitive C-reactive protein (Hs-CRP) and YKL-40 levels, and serum and saliva interleukin(IL)-6, IL-1β, IL-8, tumor necrosis factor(TNF)-α, total oxidant status(TOS), total antioxidant status(TAS), nitric oxide(NO) levels were evaluated. The periodontal findings of the groups were similar. The majority of the subjects in both groups had gingivitis. In SCD group, significantly higher serum YKL-40, Hs-CRP, IL-6, IL-8, TNF-α, TOS, NO and salivary IL-6, IL-8 and TNF-α levels were observed whereas serum and salivary total antioxidant status (TAS) levels significantly decreased in comparison with the controls (p<0.05). There were positive correlations between serum YKL-40 and salivary IL-6 (r=0.221, p=0.041), IL-1β (r=0.263, p=0.014), TNF-α (r=0.217, p=0.045). Furthermore serum YKL-40 levels were highly correlated with serum Hs-CRP levels (r=0.559, p=0.000).

In conclusion; Higher serum YKL-40 and cytokine levels observed in children with SCD in comparison with their healthy counterparts. Although, observed oral health status were similar in both groups, increased levels of local pro-inflammatory cytokines were determined in the patients with SCD. Furthermore serum YKL-40 levels correlated with salivary cytokine levels. YKL-40 might be a potential novel marker for inflammatory status in SCD.