Aim: To study the cytokine profile in individuals with dental implants and the intra-individual correlations in crevicular fluid samples from healthy and periodontitis/peri-implantitis sites. In addition, to calculate the diagnostic value of a combination of cytokines.

Material and Methods: Patients (n=163) with dental implants and a minimum of 10 years follow-up were included. Samples from gingival crevicular fluid (GCF) and peri-implant crevicular fluid (PICF) was collected from healthy and diseased sites within the same patient. Cytokines levels were detected using Bio-Plex Pro Human inflammation Panel.

Results: The levels of APRIL/TNFSF13, gp130s/IL6rβ, IL-19 and IL-35 were significantly higher at healthy implants compared to healthy teeth. The levels of IL11 and LIGHT/TNFSF14 were significantly lowe for healthy implants compared to healthy teeth. The cytokines IL-29/IFN-λ1 and TWEAK/TNFSF12 were significantly correlated with peri-implantitis. The cytokines IFN-β, sTNF-R1 and TWEAK/TNFSF12 were significantly correlated to periodontitis.

Conclusion: The intra-individual cytokines levels differed significantly between healthy tooth and healthy implant sites whereas no difference was found between sites with periodontitis and peri-implantitis. Higher levels of the cytokine TWEAK/TNFSF12 is associated with both periodontitis and peri-implantitis and could be a new biomarker candidate to identify disease. Correctly classified observations were 82% regarding peri-implantitis and 91% regarding periodontitis.