

## The RANKL-OPG system and TACE as prognostic biomarkers for Periodontitis

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Receptor activator of NF-kappaB Ligand (RANKL) and osteoprotegerin (OPG) are a system of antagonistic molecules that regulate bone resorption. RANKL is a membrane-bound ligand that stimulates osteoclast formation and bone resorption, whereas OPG is a soluble decoy receptor that blocks its action. Tumor necrosis factor- $\alpha$  converting enzyme (TACE) is a metalloprotease which can shed a number of cytokines from the cell membrane, including RANKL and enhancing further its osteoclastogenic effects. These molecules have been detected in gingival crevicular fluid (GCF) and have been associated with periodontal disease. This proposed project aims to evaluate the effect of periodontal therapy on the levels of RANKL, OPG and TACE in GCF, and their association to clinical parameters. GCF will be obtained from systemically healthy patients with generalized severe periodontitis (n=30) before and after non-surgical periodontal therapy, over a period of 6-months. The concentrations of RANKL, OPG and TACE in GCF will be measured by commercially available ELISA kits. It is hypothesized that RANKL and TACE will be decreased, whereas OPG will be reduced after treatment, and an association with clinical parameters will be revealed. If so, this would strengthen the implication of these molecules in the establishment of periodontitis, which may potentially constitute prognostic markers of the disease.