

DISERTASI

**EFEKTIFITAS *SCALING ROOT PLANING* PADA ANAK
STUNTING YANG MENDERITA GINGIVITIS TERHADAP
KADAR MATRIX METALLOPROTEINASE-8, *TISSUE
INHIBITOR OF METALLOPROTEINASE-1*
DAN INTERLEUKIN-10**



OLEH : MEIZA NERAWATI

NIM : 2230312002

Pembimbing :

1. Prof. Dr. drg. Nila Kasuma, M.Biomed
2. Prof. dr. Nur Indrawaty Lipoeto, MSc, PhD, SpGK (K)
3. Prof. Dr. Eti Yerizel, MS

**PROGRAM STUDI ILMU BIOMEDIS PROGRAM DOKTOR
FAKULTAS KEDOKTERAN UNIVERSITAS ANDALAS
PADANG**

2025

**EFEKTIVITAS SCALING ROOT PLANING PADA ANAK STUNTING
YANG MENDERITA GINGIVITIS TERHADAP KADAR MATRIX
METALLOPROTEINASE-8, TISSUE INHIBITOR OF
METALLOPROTEINASE-1 DAN INTERLEUKIN-10**

Meiza Nerawati

ABSTRAK

Latar belakang : Stunting berdampak pada kesehatan rongga mulut. Anak stunting mengalami atrofi kelenjar saliva dan mengakibatkan penurunan komponen imunitas saliva sehingga rentan terhadap penyakit inflamasi seperti gingivitis. Gingivitis menyebabkan aktivasi mediator pro inflamasi dan memicu peningkatan kadar *Matrix Metalloproteinase-8* (MMP-8) penurunan *Tissue Inhibitor of Metalloproteinase-1* (TIMP-1) dan *Interleukin-10* (IL-10). *Scaling root planing* (SRP) merupakan terapi mekanis untuk perawatan gingivitis.

Tujuan : mengetahui efektivitas *scaling root planing* pada anak stunting yang menderita gingivitis terhadap kadar *Matrix Metalloproteinase-8*, *Tissue Inhibitor of Metalloproteinase-1* dan *Interleukin-10*.

Metode: Penelitian ini berupa *experimental* dengan rancangan *pre and post-test group design*. Subjek penelitian murid SD di wilayah kerja puskesmas Lubuk Kilangan dari bulan Mei 2023 hingga Juni 2025. Subjek berumur 6-12, memenuhi kriteria inklusi dan eksklusi. Sebanyak 30 orang stunting dan 30 orang normal yang menderita gingivitis. Kedua kelompok diperiksa parameter klinisnya (*Oral Hygiene Index* dan *Gingival Index*) dan diberi perlakuan terapi SRP. Pengambilan saliva 2 kali, sebelum dan 4 minggu sesudah terapi. Pemeriksaan kadar biomarker dengan ELISA di laboratorium Biomedik Fakultas Kedokteran Universitas Andalas.

Hasil: Didapatkan penurunan bermakna parameter klinis. Peningkatan bermakna kadar MMP-8, TIMP-1 pada kedua kelompok subjek. Terdapat peningkatan bermakna kadar IL-10 pada anak normal dan penurunan tidak bermakna pada anak stunting.

Kesimpulan : Penelitian ini menunjukkan bahwa SRP efektif menurunkan parameter klinis (OHI dan GI) dan meningkatkan kadar TIMP-1, IL-10. Tetapi tidak efektif menurunkan kadar MMP-8

Kata Kunci : Stunting, Gingivitis, *Scaling Root Planing*, MMP-8, TIMP-1 dan IL-10

Effectiveness of Scaling and Root Planing on Stunted Children Who Suffer With Gingivitis in Relation to the Levels Matrix Metalloproteinase-8, Tissue Inhibitor of Metalloproteinase-1, and Interleukin-10

Meiza Nerawati

ABSTRACT

Background: Stunting has an impact on oral health. Stunted children experience atrophy of the salivary glands, resulting in a decrease in salivary immune components, making them more susceptible to inflammatory diseases such as gingivitis. Gingivitis triggers the activation of pro-inflammatory mediators and leads to an increase in Matrix Metalloproteinase-8 (MMP-8) levels, along with a decrease in Tissue Inhibitor of Metalloproteinase-1 (TIMP-1) and Interleukin-10 (IL-10). Scaling and root planing (SRP) is a mechanical therapy for treating gingivitis. **Objective:** To determine the effectiveness of scaling and root planing in stunted children with gingivitis on the levels of Matrix Metalloproteinase-8, Tissue Inhibitor of Metalloproteinase-1, and Interleukin-10. **Methods:** This was an experimental study using a pre- and post-test group design. The study subjects were elementary school students in the working area of the Lubuk Kilangan Public Health Center from May 2023 to June 2025. Subjects were aged 6–12 years and met the inclusion and exclusion criteria. A total of 30 stunted and 30 non-stunted children with gingivitis were included. Both groups were assessed for clinical parameters (Oral Hygiene Index and Gingival Index) and received SRP therapy. Saliva samples were collected twice, before and four weeks after therapy. Biomarker levels were analyzed using ELISA at the Biomedical Laboratory, Faculty of Medicine, Andalas University. **Results:** There was a significant decrease in clinical parameters. A significant increase in MMP-8 and TIMP-1 levels was observed in both groups. IL-10 levels significantly increased in non-stunted children, while a non-significant decrease was observed in stunted children. **Conclusion:** This study shows that SRP is effective in reducing clinical parameters (OHI and GI) and increasing TIMP-1 and IL-10 levels. However, it is not effective in reducing MMP-8 levels.

Keywords: Stunting, Gingivitis, Scaling and Root Planing, MMP-8, TIMP-1, IL-10