

INTISARI

Perawatan regeneratif penyakit periodontal melalui metode *Guided Tissue Regeneration* (GTR) dilakukan dengan menempatkan membran berupa nanofiber *chitosan-polyvinyl alcohol* (PVA). Penggunaan membran lebih optimal dengan penambahan *growth factor*, salah satunya terkandung pada *Injectable Platelet-Rich Fibrin* (i-PRF). Tujuan penelitian adalah untuk mengetahui pengaruh kombinasi i-PRF dengan nanofiber *chitosan-PVA* terhadap kadar *Transforming Growth Factor- β* (TGF- β).

Sampel darah disentrifugasi dengan kecepatan 700 rpm selama 3 menit untuk diambil lapisan kuning teratas, yaitu i-PRF. Sampel penelitian terdiri tiga kelompok, yaitu kombinasi i-PRF dengan nanofiber *chitosan-PVA*, i-PRF, dan nanofiber *chitosan-PVA* yang direndam di *Phosphate Buffer Saline* (PBS). Larutan hasil rendaman tiap kelompok diambil pada 15 menit, 60 menit, 1 hari, 3 hari, dan 10 hari untuk dilakukan uji ELISA. Kadar TGF- β tiap sampel dilihat melalui *microplate reader* pada panjang gelombang 450 nm. Data hasil penelitian dianalisis menggunakan uji *Friedman* dan uji *Mann-Whitney*.

Hasil uji *Friedman* menunjukkan bahwa kelompok kombinasi berpengaruh dalam menghambat kadar TGF- β ($p < 0,05$). Hasil uji *Mann-Whitney* menunjukkan perbedaan bermakna ($p < 0,05$) antara semua waktu pengamatan kelompok i-PRF dengan semua waktu pengamatan kelompok nanofiber dan kelompok kombinasi. Perbedaan bermakna tampak antara kelompok kombinasi 1 hari dengan kelompok nanofiber 60 menit serta antara kelompok kombinasi pada 15 menit, 60 menit, 1 hari, dan 3 hari dengan kelompok nanofiber 3 hari dan 10 hari. Perbedaan bermakna antara kelompok nanofiber antara 60 menit dengan 3 hari dan 10 hari. Selain yang telah disebutkan, tidak ditemukan perbedaan bermakna tiap waktu pengamatan lain pada masing-masing kelompok. Kesimpulan penelitian ini adalah kombinasi i-PRF dengan nanofiber *chitosan-PVA* berpengaruh dalam menghambat kadar TGF- β .

Kata-kata kunci: *injectable platelet-rich fibrin*, nanofiber *chitosan-polyvinyl alcohol*, kadar *transforming growth factor- β*

ABSTRACT

Regenerative treatment of periodontal disease through Guided Tissue Regeneration (GTR) method is carried out by placing a membrane in the form of chitosan-polyvinyl alcohol (PVA) nanofibers. The use of membrane is more optimal with the addition of growth factors, one of which is contained in Injectable Platelet-Rich Fibrin (i-PRF). The purpose of the study was to determine the effect of combination i-PRF with chitosan-PVA nanofiber on levels of Transforming Growth Factor- β (TGF- β).

The blood was centrifuged at 700 rpm for 3 minutes to take the top yellow layer, namely i-PRF. The sample consisted of three groups, namely combination of iPRF with chitosan-PVA nanofiber, i-PRF, and chitosan-PVA nanofiber soaked in Phosphate Buffer Saline (PBS). The soaking solution for each group was taken at 15 minutes, 60 minutes, 1 day, 3 days, and 10 days for the ELISA test. TGF- β levels of each sample were seen through a microplate reader at a wavelength of 450 nm. The research data were analyzed using Friedman test and *Mann-Whitney* test.

The Friedman test results showed that the combination group had an effect on inhibiting TGF- β levels ($p < 0.05$). The results of the *Mann-Whitney* test showed a significant difference ($p < 0.05$) between all observation times of the i-PRF group at all observation times of the nanofiber group and the combination group. Significant differences were seen between the 1 day combination group and the 60 minute nanofiber group and between the 15 minute, 60 minute, 1 day, and 3 day combination group with the 3 day and 10 day nanofiber group. There was a significant difference in the nanofiber group between 60 minutes and 3 days and 10 days. In addition to those already mentioned, no significant differences were found at each observation time for each group. The conclusion of this study is that the combination of i-PRF with chitosan-PVA nanofiber has an effect on inhibiting TGF- β levels.

Keywords: injectable platelet-rich fibrin, chitosan-polyvinyl alcohol nanofiber, levels of transforming growth factor- β