

INTISARI

Penyakit periodontal merupakan penyakit yang kompleks dan prosedur-prosedur regeneratif yang umumnya dilakukan hanya mampu mengembalikan sebagian dari jaringan semula. Oleh karena itu, *Platelet-Rich Fibrin* (PRF) dikembangkan sebagai salah satu biomaterial tambahan untuk regenerasi periodontal. *Platelet-Rich Fibrin* merupakan generasi kedua konsentrat platelet yang dapat melepaskan berbagai *growth factor*, salah satunya yaitu *Insulin-like Growth Factor-1* (IGF-1). *Narrative review* ini bertujuan untuk mengetahui peran kandungan IGF-1 pada PRF terhadap penyembuhan jaringan periodontal.

Pencarian literatur pada *narrative review* ini menggunakan *database Pubmed, Google Scholar, Science Direct, Wiley Online Library, dan Cochrane Library*. Kriteria inklusi dalam pencarian literatur yaitu jurnal *review*, jurnal penelitian, jurnal *case report*, dan buku berbahasa Inggris atau Indonesia yang dipublikasi pada tahun 2011-2021, sedangkan kriteria eksklusi yaitu sumber pustaka yang tidak dapat diakses, tidak utuh, dan/atau tanpa metode penelitian. Total literatur yang di-*review* adalah 21 literatur dengan 15 literatur utama yang membahas peran kandungan IGF-1 pada PRF terhadap penyembuhan jaringan periodontal.

Hasil dan kesimpulan *review* menunjukkan bahwa IGF-1 berperan dalam penyembuhan jaringan periodontal yaitu dalam meningkatkan migrasi fibroblas dan perlekatan gingiva; meningkatkan proliferasi serta diferensiasi *Periodontal Ligament Stem Cells* dan fibroblas ligamen periodontal; meningkatkan osteogenesis dan *remodeling* tulang alveolar; serta meningkatkan sementogenesis dan sintesis *extracellular matrix* pada sementum. Selain itu, kombinasi IGF-1 dengan *growth factor* lain terutama *Platelet-Derived Growth Factor* dapat meningkatkan kemampuan regeneratif dari IGF-1. Kandungan IGF-1 pada PRF ditemukan paling banyak pada A-PRF+ diikuti dengan L-PRF dan A-PRF.

Kata kunci: *Insulin-like Growth Factor-1, Platelet Rich Fibrin, regenerasi jaringan periodontal, penyembuhan jaringan periodontal.*

ABSTRACT

Periodontal disease is a complex disease and the regenerative procedures that were generally performed were limited to restore part of the original periodontal tissue. Therefore, Platelet-Rich Fibrin (PRF) had been developed as an additional biomaterial for periodontal regeneration. Platelet-Rich Fibrin was the second generation of platelet concentrate that could release various growth factors, including Insulin-like Growth Factor-1 (IGF-1). The aim of this study was to determine the role of IGF-1 content in PRF on periodontal tissue healing.

Literature search was conducted with databases including Pubmed, Google Scholar, Science Direct, Wiley Online Library, and Cochrane Library. The inclusion criteria were review journals, research journals, case report journals, and textbooks written in English or Bahasa published in 2011-2021, while the exclusion criteria were articles that were inaccessible, incomplete, and/or articles without research methods. A total of 21 literatures were reviewed in this narrative review with 15 main literatures discussed the role of IGF-1 content in PRF on periodontal tissue healing.

The results and conclusion of the review showed that IGF-1 had a role in improving healing of periodontal tissues such as increased fibroblast migration and gingival attachment; increased proliferation and differentiation of periodontal ligament stem cells and fibroblasts; increased osteogenesis and alveolar bone remodeling; increased cementogenesis and synthesis of extracellular matrix in cementum. In addition, the combination of IGF-1 with other growth factors, especially Platelet-Derived Growth Factor could also increase the regenerative ability of IGF-1. The IGF-1 content in PRF was found to be most abundant in A-PRF+ followed by L-PRF and A-PRF.

Keywords: *Insulin-like Growth Factor-1, Platelet Rich Fibrin, periodontal regeneration, periodontal healing.*