

## APPLICATION OF METRONIDAZOLE LOADED MEMBRANE FOR PERIODONTAL DISEASE: A BRIEF REVIEW

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### ABSTRACT

Periodontitis is the inflammation of periodontal tissues that support the teeth. 86% of adults over the age of 70 suffer at least one case of moderate periodontitis leading to the 25% cases of teeth loss. Guided bone regeneration (GBR) is an effective technique used for periodontium reconstruction. This technique uses barrier membranes which prevent epithelial growth in the wound site and can be supplemented with antibiotics to protect the wound against opportunistic infections. Traditionally, the clinic therapy for anti-infection is to use antibiotics through injection or oral administration resulted in poor delivery of antibiotic to the defect site leading to cytotoxicity. Metronidazole (MNA), commonly used antibiotics, offer the benefits of a high degree of efficacy and with limited adverse side effects. This paper aimed to systematically review the current use of metronidazole loaded onto membranes in periodontitis treatment. SCOPUS and PubMed databases were used to search the articles systematically. The search strategy performed using the following keywords: "metronidazole", "membrane" and "periodontal disease". The inclusion criteria were all original studies published in English within five years. The exclusion criteria were any dissertations, unpublished documents, and review articles. Initial screening of papers yielded 15 papers (Scopus=9 and Pubmed=6), but only five articles met the inclusion criteria dealing with MNA antibiotics delivery. Many of the papers reported MNA in forms of mucoadhesive tablet or gel loaded onto different types of membranes (poly 3-hydroxybutyrate, collagen, and chitosan) as topical application of sustained release of antibiotic. The drug delivery employed were able to deliver the desired antibiotics dose to the infected site with an extended period while minimising cytotoxicity. However, a high amount of MNA delivered to the defect site leading to cytotoxicity. In conclusion, the use of MNA loaded membrane demonstrated promising results for periodontitis, but improvement is needed in terms of drug delivery mechanism.

**Keywords:** Metronidazole, Membrane, Periodontitis.

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