

Multifunctional nanocarriers for the treatment of periodontitis: Immunomodulatory, antimicrobial, and regenerative strategies

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Periodontitis is an inflammatory disease, in which the host immuno-inflammatory response against the dysbiotic subgingival biofilm leads to the breakdown of periodontal tissues. Most of the available treatments seem to be effective in the short-term; nevertheless, permanent periodical controls and patient compliance compromise long-term success. Different strategies have been proposed for the modulation of the host immune response as potential therapeutic tools to take a better care of most susceptible periodontitis patients, such as drug local delivery approaches. Though, maintaining an effective drug concentration for a prolonged period of time has not been achieved yet. In this context, advanced drug delivery strategies using biodegradable nanocarriers have been proposed to avoid toxicity and frequency-related problems of treatment. The versatility of distinct nanocarriers allows the improvement of