

INTISARI

Gingivitis merupakan bentuk penyakit periodontal berupa peradangan pada gingiva yang bersifat reversibel. Penggunaan agen kimiawi seperti antibiotik, klorheksidin, dan *povidone iodine* sebagai *coolant* dalam *scaling* dan *root planing* untuk perawatan gingivitis memiliki efek negatif berupa mukosa kering, perubahan pengecapan temporer, dan resistensi bakteri.

Tujuan *narrative review* ini adalah mengkaji siwak (*Salvadora persica*) mengandung senyawa aktif saponin, silika, flavonoid, sulfur, tannin, essential oil yang memiliki mekanisme efek antibakteri, antiinflamasi, dan *wound healing* sebagai *ultrasonic scaler coolant agent* pada perawatan gingivitis. Pencarian literatur menggunakan database *ScienceDirect*, *PubMed*, *Scopus* dengan kata kunci siwak (*Salvadora Persica*), gingivitis, *ultrasonic scaler*, *ultrasonic scaler mechanism*, *coolant agent*, *antibacterial*, *antiinflammatory*, *wound healing*, *scaling and root planning*.

Berdasarkan studi literatur kandungan aktif ekstrak siwak (*Salvadora Persica*) memiliki efek antibakteri, antiinflamasi, dan *wound healing*. Mekanisme efek antibakteri pada senyawa saponin ekstrak siwak pembentukan serabut kolagen tipe I dengan meningkatkan permeabilitas membran sel bakteri dan menyebabkan bakteri lisis, menghambat pembentukan biofilm, menyeimbangkan pH saliva. Senyawa flavonoid dalam ekstrak siwak menekan sitokin proinflamasi seperti IL-1 β , IL-6, IL-8, TNF- α dan IFN, inhibisi enzim COX-1 dan COX-2, dengan pelepasan simultan enzim α -Amilase yang mendukung efek anti-inflamasi, flavonoid juga mampu mempercepat penyembuhan luka dengan memperpendek waktu perdarahan dan inflamasi, mempercepat pembentukan jaringan granulasi. Tanin dalam ekstrak siwak menstimulasi produksi saliva, membatasi inflamasi sekunder, membantu proses penyembuhan inflamasi pada gingiva. *scaling root planning* menggunakan *ultrasonic scaler* menghasilkan mekanisme *acoustic microstreaming*, vibrasi mekanis, irigasi, kavitasi yang mampu mengeliminasi plak dan kalkulus. Efek biologis tersebut menunjukkan bahwa ekstrak siwak berpotensi digunakan sebagai *coolant agent ultrasonic scaler* selama *scaling* dan *root planing* pada perawatan gingivitis.

Kata kunci: siwak, gingivitis, antibakteri, antiinflamasi, *coolant agent*, *ultrasonic scaler mechanism*

ABSTRACT

Gingivitis is one of periodontal disease characterized by inflammation of the gingiva that is reversible. The use of chemical agents such as antibiotics, chlorhexidine, and povidone iodine as coolants in scaling and root planning for gingivitis treatment has negative effects such as hypersensitivity reactions and bacterial resistance.

The objective of the narrative review is to examine miswak (*Salvadora persica*) contains active compounds such as saponin, silica, flavonoid, sulphur, tannin, essential oil, that have mechanism effects of antibacterial, anti-inflammatory, and wound healing as an ultrasonic scaler coolant agent for scaling and root planing treatments. Literature search using ScienceDirect, PubMed, Scopus databases with keywords *Salvadora Persica*, gingivitis, ultrasonic scaler, ultrasonic scaler mechanism, coolant agent, antibacterial, antiinflammatory, wound healing, scaling and root planning.

Based on literature studies, the active contents of miswak extract (*Salvadora persica*) has antibacterial, anti-inflammatory, and wound healing effects. Mechanism of antibacterial effect on saponin compounds of miswak extract by increasing the permeability of bacterial cell membranes and causing bacterial lysis, inhibiting the formation of biofilms, balancing the pH of saliva. Flavonoid compounds in miswak extract suppresses pro-inflammatory cytokines such as IL-1 β , IL-6, IL-8, TNF- α and IFN, inhibition of the enzymes COX-1 and COX-2, with the simultaneous release of the enzyme α -Amylase that supports the anti-inflammatory effect, Flavonoids are also able to accelerate wound healing by shortening bleeding and inflammatory time, accelerating the formation of granulation tissue. Tannins in miswak extract stimulate saliva production, limit secondary inflammation, help the healing process of inflammation in the gingiva. Scaling root planning using ultrasonic scalers produce acoustic microstreaming mechanisms, mechanical vibrations, irrigation, cavitation which is able to eliminate plaque and calculus. The biological effect of miswak extract indicates that it has potential to be used as an ultrasonic scaler coolant agent during scaling and root planning for gingivitis treatment.

Keyword: *Salvaadora Persica*, gingivitis, antibacterial, anti-inflammatory, coolant agent, ultrasonic scaler mechanism