

# Efek paparan pasta gigi propolis UI dalam menghambat pembentukan biofilm streptococcus mutans atau streptococcus gordonii In vitro = The effect of propolis UI toothpaste in inhibiting biofilm formation of streptococcus mutans or streptococcus gordonii in vitro

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## Abstrak

**Latar Belakang:** Perkembangan karies gigi berkaitan dengan bakteri *Streptococcus mutans* atau *Streptococcus gordonii*. Propolis dilaporkan sebagai agen antibakteri karena mengandung flavonoid berupa apigenin dan tt-farnesol yang dapat menghambat aktivitas enzim glukosiltransferase dan mempengaruhi integritas membran bakteri.

**Tujuan:** Menganalisis potensi hambat pasta gigi mengandung ekstrak propolis UI terhadap pembentukan biofilm *Streptococcus mutans* atau *Streptococcus gordonii*.

**Metode:** Biofilm *Streptococcus mutans* atau *Streptococcus gordonii* yang telah dipaparkan pasta gigi ekstrak propolis UI dengan konsentrasi 25mg/10ml, 50mg/10ml, dan 100mg/10ml kemudian diinkubasi selama 4 jam (fase adhesi), 12 jam (fase akumulasi aktif) dan 24 jam (fase maturasi) pada suhu 37°C. Persentase inhibisi dinilai dengan menggunakan MTT assay.

**Hasil:** Persentase potensi hambat biofilm *Streptococcus mutans* tertinggi setelah inkubasi 12 jam dan *Streptococcus gordonii* setelah inkubasi 4 jam dengan konsentrasi 100mg/10 ml.

**Kesimpulan:** Efek paparan pasta gigi mengandung ekstrak propolis UI dalam menghambat pembentukan biofilm *Streptococcus mutans* atau *Streptococcus gordonii* dipengaruhi oleh konsentrasi dan durasi paparan pasta gigi UI.

.....**Background:** The development of dental caries has been found to be associated with *Streptococcus mutans* and *Streptococcus gordonii*. Propolis has been reported as a potent antimicrobial material because containing flavonoids such as apigenin and tt-farnesol that inhibit glucosyltransferase enzyme activity and membrane integrity.

**Objective:** To analyze the effect of toothpaste containing propolis wax UI in inhibit *Streptococcus mutans* or *Streptococcus gordonii* biofilm formation.

**Methods:** *Streptococcus mutans* and *Streptococcus gordonii* biofilm that has been exposed by propolis UI toothpaste at concentration 25mg/10ml, 50mg/10ml, dan 100mg/10ml was incubated for 4 hours (adherence phase), 12 hours (active accumulation phase) and 24 hours (maturation phase) at 37°C. The percentage of inhibition was tested with MTT assay.

**Result:** Inhibition percentage of *Streptococcus mutans* the highest is on active accumulation phase and *Streptococcus gordonii* biofilm is on adherence phase at concentraton 100mg/10ml.

**Conclusion:** Propolis UI toothpaste effect on inhibiting biofilm formation of *Streptococcus mutans* or *Streptococcus gordonii* depend on concentration and duration of time.