

ABSTRAK

Kusumawardhani, Ratna Putri. 2016. *Efek Antibakteri Minyak Atsiri Pada Daun Sirih (Piper betle linn) Dalam Menghambat Pertumbuhan Bakteri Streptococcus mutans Secara In Vitro*. Tugas Akhir, Program Studi Pendidikan Dokter Gigi Fakultas Kedokteran Universitas Brawijaya. Pembimbing: (1) drg. Yuliana Ratna Kumala, Sp.KG. (2) drg. Nenny Prasetyaningrum, M.Ked.

Prevalensi karies gigi di Indonesia masih tinggi. Karies gigi disebabkan oleh bakteri *Streptococcus mutans* dan faktor lain seperti substrat, *host*, dan waktu yang keempat faktor tersebut saling bekerja sama dalam pembentukan karies. Upaya preventif dalam menghambat pertumbuhan bakteri penyebab karies seperti penggunaan obat kumur *chlorhexidine gluconate* bila digunakan terus menerus bisa memberikan pewarnaan ekstrinsik pada gigi, sehingga perlu dicari alternatif bahan alami lain. Salah satu bahan alami yang banyak digunakan masyarakat adalah daun sirih yang diduga memiliki daya antibakteri karena adanya kandungan minyak atsiri yang tersusun dari karvakrol, kavibetol, alil pirokatekol, p-eugenol, dan kavikol. Penelitian ini menggunakan metode detilasi uap untuk memperoleh minyak atsiri pada daun sirih. Tujuan penelitian ini adalah untuk mengetahui efek antibakteri minyak atsiri pada daun sirih (*Piper betle Linn*) dalam menghambat pertumbuhan bakteri *Streptococcus mutans* secara *in vitro*. Penelitian ini menggunakan metode *agar well diffusion*. Konsentrasi minyak atsiri daun sirih yang digunakan adalah 12,5%; 25%; 50%; 100%, kontrol positif *Chlorhexidine gluconate* 0,2%, dan kontrol negatif aquades. Kemudian diinkubasi selama 2x24 jam pada suhu 37°C. Analisis data menunjukkan perbedaan bermakna antara berbagai konsentrasi minyak atsiri pada daun sirih (*Piper betle Linn*) terhadap pertumbuhan *Streptococcus mutans* ($p < 0,05$). Uji regresi linier sederhana menunjukkan adanya pengaruh konsentrasi minyak atsiri daun sirih (*Piper betle Linn*) dalam menghambat pertumbuhan *Streptococcus mutans*. Uji korelasi menunjukkan adanya hubungan signifikan antara pemberian minyak atsiri daun sirih (*Piper betle Linn*) terhadap pertumbuhan *Streptococcus mutans*. Kesimpulan pada penelitian ini yaitu minyak atsiri pada daun sirih (*Piper betle Linn*) memiliki efek antibakteri dalam menghambat pertumbuhan *Streptococcus mutans* secara *in vitro* dengan diameter zona hambat terbesar 12,325 milimeter pada konsentrasi minyak atsiri daun sirih (*Piper betle Linn*) 100% dan diameter zona hambat terkecil 10,825 milimeter pada konsentrasi minyak atsiri daun sirih (*Piper betle Linn*) 12,5%.

Kata Kunci: Karies, *Streptococcus mutans*, minyak atsiri daun sirih (*Piper betle Linn*), antibakteri.

ABSTRACT

Kusumawardhani, Ratna Putri. 2016. *Antibacterial Effect of Betel Leaves (Piper betle Linn) Essential Oil in Inhibiting the Growth of Streptococcus mutans in Vitro*. Final Assignment, Dentistry Program, Faculty of Medicine, Brawijaya University. Supervisors: (1) drg. Yuliana Ratna Kumala, Sp.KG. (2) drg. Nenny Prasetyaningrum, M.Ked.

The prevalence of dental caries in Indonesia is still high. Dental caries is occurred by the infection of mouth bacterial *Streptococcus mutans*, and the other factors such as diet, host, and time. Many various preventive efforts are used to decrease the number of dental caries incidents. One of them is the used of synthetic antimicrobial drugs, but if it used continuously, it will gives some extrinsic stains on teeth. Therefore, we need to find another alternative drugs to decrease the number of caries incidents. One of the herb drugs which suggested having antibacterial activity is betel leaves. Betel leaves (*Piper betle Linn*) essential oil contains active substances that have antibacterial effects such as karvakrol, kavibetol, alil pirokatekol, p-eugenol, and kavikol. This experiment used hydro distillation method to extract betel leaves essential oil. The purpose of this experiment is to know the antibacterial effect of betel leaves (*Piper betle Linn*) essential oil in inhibiting the growth of *Streptococcus mutans* in vitro. This experiment was done by using *agar well diffusion* method. The concentration of betel leaves essential oils are 12,5%; 25%; 50%; 100%, *Chlorhexidine gluconate* 0,2% as positive control, and aquadest as negative control. Those are incubated for 2X24 hours on temperature 37°C. The statistic result showed the significant differences among various concentration of betel leaves essential oil in inhibiting the growth of *Streptococcus mutans* ($p < 0,05$). Simple linear regression test showed the influence of betel leaves (*Piper betle Linn*) essential oil concentration in inhibiting the growth of *Streptococcus mutans*. The correlation test showed a significant relation between the giving of betel leaves (*Piper betle Linn*) essential oil with the growth of *Streptococcus mutans*. The conclusion of this experiment is that betel leaves (*Piper betle Linn*) essential oil has an antibacterial effect in inhibiting the growth of *Streptococcus mutans* with the biggest inhibitory zone diameter 12,325 millimeters on betel leaves (*Piper betle Linn*) essential oil concentration 100% and the smallest inhibitory zone diameter 10,825 millimeters on betel leaves (*Piper betle Linn*) essential oil concentration 12,5%.

Key words: Dental caries, *Streptococcus mutans*, betel leaves (*Piper betle Linn*) essential oil, antibacterial effect