

THE DIFFERENCE BETWEEN ANTIBACTERIAL ACTIVITY OF COCOA HUSK EXTRACT (*Theobroma cacao*) AND NaOCl 2.5% AGAINST *Porphyromonas gingivalis*

ABSTRACT

Background: Since pulp infection plays an important role in the development of periradicular lesions, endodontic treatment should be directed to eliminate bacterial and their products. However, currently 20% of cases of apical periodontitis are not resolved after root canal treatment and therefore required for new root canal disinfection. The most commonly used irrigation material today is NaOCl 2.5%. However, NaOCl has negative effects, including being toxic when the material is injected into the periradicular tissue causing extensive pain, bleeding and swelling. Until now, many drugs come from plants that are still produced from plant extracts. One of the plants that can be utilized is cocoa (*Theobroma cacao*). Cocoa contains active compounds, such as saponins, tannins, alkaloids, flavonoids, aromatic terpenoids, theobromins and other metabolites. Cocoa husk has been studied to have an antibacterial effect on *Porphyromonas gingivalis* which is the main bacterial cause of apical periodontal. However, the difference in antibacterial activity between cocoa husk extract and NaOCl 2.5% against *Porphyromonas gingivalis* has not been studied. **Purpose:** The aim of this study is to compare antibacterial activity of cocoa husk extract and NaOCl 2.5% against *Porphyromonas gingivalis*. **Method:** This research was a laboratory experimental study. *Porphyromonas gingivalis* were swabbed to nutrient agar medium. Consequently, cocoa husk extract 25% and NaOCl 2.5% were placed in wells of 5mm diameter and nutrient agar medium. The diameter of the zone of inhibition around the test materials was measured after 24 hours. **Result:** Cocoa husk extract has lower mean inhibitory zone diameter (14.22) than NaOCl 2.5% (16.06). **Conclusion:** Cocoa husk extract has lower antibacterial activity against *Porphyromonas gingivalis* compared to NaOCl 2.5%.

Key words: cocoa husk extract; NaOCl 2.5%; *Porphyromonas gingivalis*.

**PERBEDAAN DAYA ANTIBAKTERI EKSTRAK KULIT KOKOA
(*Theobroma cacao*) DAN NaOCl 2,5% TERHADAP *Porphyromonas
gingivalis***

ABSTRAK

Latar Belakang: Sejak infeksi pulpa berperan penting dalam perkembangan lesi periradikuler, perawatan endodontik harus diarahkan untuk mengeliminasi bakteri dan produk bakteri. Akan tetapi, saat ini 20% kasus periodontitis apikalis tidak terselesaikan setelah perawatan saluran akar dan sebab itu diperlukan perbaruan disinfeksi saluran akar. Bahan irigasi yang sering digunakan saat ini adalah NaOCl 2,5%. Tetapi, NaOCl mempunyai kekurangan, antara lain bersifat toksik ketika bahan ini diinjeksikan sampai ke jaringan periradikular akan menyebabkan rasa sakit, pendarahan serta pembengkakan yang luas. Sampai saat ini, banyak obat berasal dari tanaman yang masih diproduksi dari ekstrak tanaman. Salah satu tanaman yang dapat dimanfaatkan adalah kokoa (*Theobroma cacao*). Kokoa mengandung senyawa aktif, berupa saponin, tannin, alkaloid, flavonoid, terpenoid aromatik, teobromin dan metabolit lain. Kulit kokoa telah diteliti memiliki efek antibakteri terhadap *Porphyromonas gingivalis* yang merupakan bakteri utama penyebab periodontal apikalis. Namun, Perbedaan daya antibakteri antara ekstrak kulit koko dan NaOCl terhadap *Porphyromonas gingivalis* belum pernah diteliti. **Tujuan:** Membandingkan perbedaan daya antibakteri ekstrak kulit kokoa dan NaOCl 2,5% terhadap *Porphyromonas gingivalis*. **Metode:** Penelitian ini adalah penelitian eksperimental laboratorium. *Porphyromonas gingivalis* ditanam pada media *nutrient agar* dengan metode *spreading*. Ekstrak kulit kokoa 25% dan NaOCl 2,5% ditaruh pada *paperdisk* berdiameter 5mm dan diletakkan diatas *petridish* yang sudah ditanami *Porphyromonas gingivalis*. Diameter zona hambat diamati setelah 2x24 jam. **Hasil:** Ekstrak kulit kokoa memiliki rata-rata diameter zona hambat lebih kecil (14,22) NaOCl 2,5% (16,06). **Kesimpulan:** Ekstrak kulit kokoa memiliki daya antibakteri lebih rendah terhadap pertumbuhan bakteri *P. gingivalis* dibandingkan dengan NaOCl 2,5%.

Kata kunci: ekstrak kulit kokoa; NaOCl 2,5%; *Porphyromonas gingivalis*.