

Abstrak

FORMULASI PASTA GIGI KOMBINASI EKSTRAK DAUN SIRIH (*Piper betle* L.) DAN CANGKANG TELUR AYAM (*Gallus gallus*) SEBAGAI ANTIBAKTERI *Streptococcus mutans* PENYEBAB KARIES GIGI

Istito'ah, Tuti Sri Suhesti, Sri Sutji Susilowati

Latar Belakang: Daun sirih mengandung senyawa organik yang memiliki aktivitas antibakteri. Ekstrak etanol daun sirih 5 mg/ml diketahui mempunyai zona hambat untuk *Streptococcus mutans* sebesar 20,6 mm. Cangkang telur ayam mengandung kalsium karbonat yang cukup tinggi yaitu sebesar 97,8%. Kalsium adalah mineral makro yang berperan sangat penting dalam pembentukan tulang dan gigi. Penelitian ini bertujuan untuk mengetahui karakteristik fisik dan daya antibakteri formula pasta gigi kombinasi ekstrak daun sirih dan cangkang telur ayam sebagai antibakteri *S. mutans*.

Metodologi: Pasta gigi dibuat 3 formula dengan variasi konsentrasi ekstrak daun sirih F1 (0,5%), F2 (1,5%), F3 (3%) dan diuji aktivitas antibakterinya menggunakan metode difusi cakram. Formula diuji sifat fisik meliputi organoleptis, homogenitas, pH, viskositas, daya lekat, daya sebar, dan stabilitas.

Hasil Penelitian: Hasil penelitian menunjukkan bahwa ketiga formula memenuhi persyaratan. Homogen, pH (4,5-10,5), viskositas (2000-50000Cps), daya lekat (>1 detik), daya sebar (5-7), dan stabil. F1 dan F2 kriteria hambat sedang, sedangkan F3 kriteria hambat kuat. Variasi ekstrak etanol daun sirih tiap formula mempengaruhi viskositas, pH, daya lekat, dan daya antibakteri secara signifikan.

Kesimpulan: Pasta gigi kombinasi ekstrak etanol daun sirih dan cangkang telur ayam mempunyai sifat fisik yang baik dan memiliki daya antibakteri terhadap *S. mutans*.

Kata Kunci: ekstrak etanol daun sirih, cangkang telur ayam, pasta gigi, *Streptococcus mutans*.

Abstract

FORMULATION OF TOOTHPASTE COMBINATION OF BETEL LEAF EXTRACT (*Piper betle* L.) AND CHICKEN EGG SHELL (*Gallus gallus*) AS AN ANTIBACTERIA OF *Streptococcus mutans* AS THE CAUSE OF DENTAL CARIES

Istito'ah, Tuti Sri Suhesti, Sri Sutji Susilowati

Background: Betel leaves contain organic compounds which have antibacterial activity. Ethanol extract of betel leaf 5 mg/ml is known to have an inhibitory zone for *Streptococcus mutans* of 20.6 mm. Chicken eggshells contain calcium carbonate which is quite high at 97.8%. Calcium is a macro mineral that plays a very important role in the formation of bones and teeth. This study aims to determine the physical characteristics and antibacterial power of a toothpaste formula with combinations of betel leaf extract and chicken eggshell as *S.mutans* antibacterial.

Methodology: The toothpaste was made by 3 formulas with variations in the concentration of betel leaf extract F1 (0.5%), F2 (1.5%), F3 (3%) and tested for antibacterial activity using the disk diffusion method. The formula was tested for physical properties including organoleptic, homogeneity, pH, viscosity, adhesion, dispersion, and stability.

Results: The results of the study showed that all 3 formulas met the requirements. Homogeneous, pH (4.5-10.5), viscosity (2000-50000Cps), adhesion (> 1 second), dispersal power (5-7), and stable. F1 and F2 have medium inhibitors criteria, while F3 has strong inhibitors criteria. The variations of betel leaf ethanol extract of each formula significantly affect viscosity, pH, adhesion, and antibacterial power.

Conclusion: The toothpaste combination of betel leaf ethanol extract and chicken eggshell has good physical properties and antibacterial power against *S.mutans*.

Keywords : betel leaf ethanol extract, chicken eggshell, toothpaste, *Streptococcus mutans*.