# ABSTRAK

**IFAN ARIANTO, 2022, FORMULASI DAN UJI ANTIBAKTERI SEDIAAN EMULGEL EKSTRAK DAUN SIRIH HIJAU (*Piper Betle L.*) TERHADAP *Propionibacterium acne* DENGAN VARIASI KONSENTRASI CARBOPOL 940, PROPOSAL SKRIPSI, PROGRAM STUDI S1 FARMASI, UNIVERSITAS SETIABUDI SURAKARTA. Dibimbing oleh apt. Siti Aisiyah, M. Sc dan apt. Ganet Eko Pramukantoro, S.Farm., M.Si.**

Senyawa dalam ekstrak daun sirih hijau yang diduga memiliki aktivitas antibakteri yaitu senyawa yang bersifat polar seperti flavonoid, tanin, saponin dan polifenol. Salah satu komponen penting dalam sediaan emulgel adalah *gelling agent*, digunakan karbopol 940 karena dapat membentuk emulgel dengan baik serta meningkatkan viskositas. Penelitian ini dilakukan untuk mengetahui variasi kosentrasi karbopol 940 terhadap mutu fisik dan stabilitas sediaan emulgel ekstrak daun sirih hijau dan mengetahui aktivitas senyawa kimia yang terdapat pada ekstrak daun sirih hijau sediaann emulgel yang memiliki aktivitas antibakteri.

Ekstrak daun sirih hijau diperoleh melalui maserasi menggunakan etanol 70%. Formulasi sediaan emulgel menggunakan konsentrasi ekstrak 5% dan variasi karbopol 940 1%, 1,5%, dan 2%, dengan mencampurkan fase gel dan fase emulsi. Sediaan emulgel daun sirih hijau diuji mutu fisik meliputi uji organoleptis, homogenitas, daya sebar, daya lekat, *p*H, viskositas, dan tipe emulsi serta uji stabilitas menggunakan *freeze thaw*. Pengujian antibakteri menggunakan metode difusi cakram dan *one-way* ANOVA untuk analisis statistik.

Variasi konsentrasi karbopol 940 berpengaruh terhadap mutu fisik dan stabilitas sediaan emulgel terutama pada uji *p*H, viskositas, daya sebar, dan daya lekat. Formula yang terbaik adalah formula I dengan variasi konsentrasi karbopol 940 1% yang menghasilkan mutu fisik dan stabilitas yang paling baik. Hasil diameter zona hambat sediaan emulgel formula 1 diperoleh sebesar 14,93 mm serta memiliki aktivitas antibakteri yang tergolong kuat dalam menghambat pertumbuhan *Propionibacterium acne*.

**Kata kunci :** daun sirih hijau, emulgel, *gelling agent,* karbopol 940, *Propionibacterium acne*

# ABSTRACT

**IFAN ARIANTO, 2022, FORMULATION AND ANTIBACTERIAL ASSESSMENT OF EMULGEL PREPARATION OF GREEN BETEL LEAVE (*Piper Betle L.*) EXTRACT AGAINST *Propionibacterium acne* WITH VARIATIONS OF CARBOPOL 940 CONCENTRATION, PROPOSAL OF THESIS, BACHELOR OF PHARMACY, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by apt. Siti Aisiyah, M. Sc. and apt. Ganet Eko Pramukantoro, S.farm., M.Si.**

Compounds in green betel leaf extract that are thought to have antibacterial activity are polar compounds such as flavonoids, tannins, saponins and polyphenols. One of the important components in emulgel preparations is the gelling agent, carbopol 940 is used because it can form emulgels well and increase the viscosity. This study was conducted to determine variations in the concentration of carbopol 940 on the physical quality and stability of emulgel preparations of green betel leaf extract and to determine the activity of chemical compounds contained in green betel leaf extract of emulgel preparations which have antibacterial activity.

Green betel leaf extract was obtained by maceration using 70% ethanol. The emulgel formulation uses an extract concentration of 5% and variations of carbopol 940 1%, 1.5%, and 2%, by mixing the gel phase and the emulsion phase. Green betel leaf emulgel preparations were tested for physical quality including organoleptic tests, homogeneity, spreadability, adhesion, pH, viscosity, and emulsion type as well as stability tests using freeze thaw. Antibacterial testing used the disc diffusion method and one-way ANOVA for statistical analysis.

Variations in the concentration of carbopol 940 affect the physical quality and stability of emulgel preparations, especially in the pH, viscosity, spreadability, and adhesion tests. The best formula is formula I with variations in the concentration of carbopol 940 1% which produces the best physical quality and stability. The diameter of the inhibition zone for Emulgel Formula 1 preparation was 14.93 mm and it has strong antibacterial activity in inhibiting the growth of *Propionibacterium acne.*

**Keywords:** green betel leaf, emulgel, gelling agent, carbopol 940, *Propionibacterium acne*