

INTISARI

Escherichia coli merupakan bakteri penyebab diare yang ditularkan melalui kontaminasi air atau makanan dan pengobatannya menggunakan antibiotik. Antibiotik yang berlebihan berpotensi menyebabkan resistensi. Bahan alam seperti daun cengkeh digunakan sebagai alternatif untuk mengatasi resistensi karena mempunyai aktivitas antibakteri. Mempertimbangkan kemudahan dalam pemanfaatan maka dibuat sediaan tablet. Penelitian ini bertujuan untuk menetapkan kadar hambat minimum (KHM) ekstrak etanol daun cengkeh serta menetapkan kadar eugenol dalam ekstrak dan tablet dengan kromatografi lapis tipis (KLT)-Densitometri, mengoptimasi aerosil serta explotab dan melihat aktivitas antibakteri tablet terhadap bakteri *E. coli*. Uji aktivitas antibakteri dalam penelitian ini menggunakan metode difusi sumuran dengan konsentrasi 1%, 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%. Desain berbasis statistik diterapkan untuk mengoptimasi aerosil dan explotab. Hasil penelitian ini ekstrak memiliki KHM 5% dengan zona hambat $5,23 \pm 1,28$ mm. Kadar eugenol ekstrak 55,09% dan tablet ekstrak 47,84%. Formula optimal 7,63% aerosil dan 2% explotab menghasilkan sifat fisik tablet dengan bobot $501,41 \pm 6,63$, kekerasan $4,97 \pm 0,16$, kerapuhan $0,90 \pm 0,09$, waktu hancur $4,33 \pm 0,58$ dan memiliki aktivitas antibakteri terhadap bakteri *E. coli* dengan zona hambat $3,72 \pm 0,20$ mm. Hasil penelitian menunjukkan bahwa formula optimasi sebagian besar memenuhi sifat fisik tablet.

Kata kunci: Cengkeh, Tablet, Aerosil, Explotab, Antibakteri

ABSTRACT

Escherichia coli is a bacteria that causes diarrhea which is transmitted through water or food contamination and is treated using antibiotics. Excessive antibiotics have the potential to cause resistance. Natural ingredients such as clove leaves are used as an alternative to overcome resistance because they have antibacterial activity. Considering the ease of use, tablet preparations were made. This research aims to determine the minimum inhibitory content (MIC) of clove leaf ethanol extract and determine the eugenol content in the extract and tablets using thin layer chromatography (TLC)-Densitometry, optimizing aerosil and explotab and looking at the antibacterial activity of the tablets against *E. coli* bacteria. The antibacterial activity test in this study used the well diffusion method with concentrations of 1%, 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%. Statistical-based design is applied to optimize aerosil and explotab. The results of this research showed that the extract had an MIC of 5% with an inhibition zone of 5.23 ± 1.28 mm. The eugenol content of the extract was 55.09% and the extract tablet was 47.84%. The optimal formula of 7.63% aerosil and 2% explotab produces physical properties of tablets with a weight of 501.41 ± 6.63 , hardness 4.97 ± 0.16 , friability 0.90 ± 0.09 , disintegration time 4.33 ± 0.58 and has antibacterial activity against *E. coli* bacteria with an inhibition zone of 3.72 ± 0.20 mm. The results showed that the optimization formula largely met the physical properties of the tablet.

Keywords: Cloves, Tablets, Aerosil, Explotab, Antibacterial