

ABSTRAK

Wira Risa Lina Simanjuntak, NIM 4173220025 (2021). Skrining Fitokimia dan Uji Aktivitas Antibakteri Ekstrak Lichen *Usnea barbata* terhadap Bakteri *Bacillus cereus* dan *Escherichia coli*.

Lichen merupakan salah satu organisme yang memiliki tingkat keanekaragaman hayati yang tinggi dan kandungan metabolit sekunder yang berguna sebagai antibakteri. Penelitian ini bertujuan untuk mengetahui senyawa metabolit sekunder dan aktivitas antibakteri ekstrak lichen *Usnea barbata* dalam menghambat pertumbuhan bakteri *Bacillus cereus* dan *Escherichia coli*. Pembuatan ekstrak *Usnea barbata* dilakukan dengan metode maserasi menggunakan pelarut etanol 96% (1:10) selama 5 hari. Berdasarkan skrining fitokimia ekstrak etanol lichen *Usnea barbata* mengandung senyawa golongan alkaloid, flavonoid, saponin dan tanin dan triterpenoid. Pengujian aktivitas antibakteri dilakukan menggunakan metode difusi cakram dengan 6 perlakuan yaitu ekstrak lichen dengan konsentrasi 2,5%; 5%; 10%; dan 20%, kontrol negatif (aquadest steril) dan kontrol positif (kloramfenikol 100 mg/mL) yang diulang sebanyak tiga kali. Data yang diperoleh berupa rata-rata diameter zona hambat. Pada perlakuan aktivitas antibakteri ekstrak lichen *Usnea barbata* terhadap pertumbuhan bakteri *Bacillus cereus* didapatkan rata-rata diameter zona hambat kontrol positif sebesar $28,1 \pm 0,95$ mm, dan sebesar $7,83 \pm 0,87$ mm; $9,43 \pm 0,15$ mm; $10,36 \pm 0,47$ mm; dan $12,33 \pm 0,41$ mm dari konsentrasi ekstrak lichen *Usnea barbata* dari yang terkecil hingga konsentrasi terbesar. Perlakuan aktivitas antibakteri ekstrak lichen *Usnea barbata* terhadap pertumbuhan *Escherichia coli* didapatkan rata-rata diameter zona hambat kontrol positif sebesar $30,83 \pm 0,15$ mm, dan sebesar $7,16 \pm 0,28$ mm; $7,66 \pm 0,15$ mm; $8,33 \pm 0,15$ mm; dan $10,73 \pm 0,15$ mm dari konsentrasi ekstrak lichen *Usnea barbata* dari yang terkecil hingga konsentrasi terbesar. Berdasarkan hasil tersebut diketahui bahwa konsentrasi paling efektif ekstrak lichen *Usnea barbata* yang memiliki diameter zona hambat terbesar adalah konsentrasi 20% dalam menghambat pertumbuhan dari kedua bakteri tersebut.

Kata kunci: *Usnea barbata*; zona hambat; *Bacillus cereus*; *Escherichia coli*

ABSTRACT

Wira Risa Lina Simanjuntak, NIM 4173220025 (2021). Phytochemical Screening and Antibacterial Activity Test of Lichen *Usnea barbata* Extract Against *Bacillus cereus* and *Escherichia coli* Bacteria.

Lichen is one of the organisms that has a high level of biodiversity and contains secondary metabolites that are useful as antibacterial. This study aims to determine secondary metabolites and antibacterial activity of *Usnea barbata* lichen extract in inhibiting the growth of *Bacillus cereus* and *Escherichia coli* bacteria. *Usnea barbata* extract was made by maceration method using 96% (1:10) ethanol as solvent for 5 days. Based on the phytochemicals, the ethanolic extract of the lichen of *Usnea barbata* contains compounds of the alkaloid, flavonoid, saponin and triterpenoid groups. Antibacterial activity testing was carried out using the disc diffusion method with 6 treatments, namely moss extract with a concentration of 2.5%; 5%; 10%; and 20%, negative control (sterile distilled water) and positive control (chloramphenicol 100 mg/mL) which were repeated three times. The data obtained in the form of the average diameter of the inhibition zone. In the treatment of antibacterial activity of *Usnea barbata* lichen extract against the growth of *Bacillus cereus* bacteria, the average diameter of the positive control inhibition zone was 28.1 ± 0.95 mm, and 7.83 ± 0.87 mm; 9.43 ± 0.15 mm; 10.36 ± 0.47 mm; and 12.33 ± 0.41 mm from the concentration of *Usnea barbata* lichen extract from the smallest to the largest concentration. The treatment of antibacterial activity of *Usnea barbata* lichen extract on the growth of *Escherichia coli* obtained an average diameter of the positive control inhibition zone of 30.83 ± 0.15 mm, and 7.16 ± 0.28 mm; 7.66 ± 0.15 mm; 8.33 ± 0.15 mm; and 10.73 ± 0.15 mm from the concentration of *Usnea barbata* lichen extract from the smallest to the largest concentration. Based on these results, it is known that the most effective concentration of *Usnea barbata* lichen extract which has the largest inhibition zone diameter is a concentration of 20% in inhibiting the growth of the two bacteria.

Keywords: *Usnea barbata*; inhibition zone; *Bacillus cereus*; *Escherichia coli*