

ABSTRACT

ANTIOXIDANT AND ANTIBACTERIAL ACTIVITY OF ETHANOL EXTRACT OF WEST LAMPUNG ROBUSTA COFFEE LEAVES (*Coffea canephora*) USING THE *ULTRASONIC ASSISTED EXTRACTION*

By

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Background: Coffee plants usually have their leaves pruned to avoid complicating harvesting and to encourage flowering and increase fruiting. Coffee leaves resulting from pruning are usually just thrown away so they need further utilization, where coffee leaves have the potential as a therapeutic agent in traditional medicine and have the potential to have antioxidant and antibacterial activity due to their high phenol content. This research aims to determine the antioxidant and antibacterial activity contained in robusta coffee leaves.

Method: This research is a laboratory scale experimental research. Extraction was carried out using the sonication method, measuring total phenolics using the *Folin-Ciocalteu* method and measuring total flavonoids using the colorimetric method. Antioxidant activity test using the DPPH method and antibacterial activity test using the cylinder diffusion method.

Results: Robusta coffee leaf extract has very strong antioxidant activity with an IC_{50} value of 34,26 ppm, a total phenolic content value of 219,46 mg GAE/g and a total flavonoid content of 261,93 mg QE/g, and produces the highest inhibitory zone diameter against *Staphylococcus aureus* bacteria was 11,1 mm and against *Escherichia coli* bacteria was 9,5 mm at a concentration of 1000 ppm.

Conclusion: Robusta coffee leaves have very strong antioxidant activity with high levels of total phenolics and flavonoids and have a good ability to inhibit the growth of *Staphylococcus aureus* and *Escherichia coli* bacteria.

Keywords: Robusta coffee leaves, sonication, total phenolics, total flavonoids, antioxidants, antibacterial, *Staphylococcus aureus*, *Escherichia coli*

ABSTRAK

AKTIVITAS ANTIOKSIDAN DAN ANTIBAKTERI EKSTRAK ETANOL DAUN KOPI ROBUSTA LAMPUNG BARAT (*Coffea canephora*) DENGAN METODE *ULTRASONIC ASSISTED EXTRACTION*

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Latar Belakang: Tanaman kopi biasanya dipangkas daunnya agar tidak menyulitkan hasil pemanenan dan mendorong pembungaan serta meningkatkan pembuahan. Daun kopi hasil pemangkasan biasanya terbuang begitu saja sehingga perlu pemanfaatan lebih lanjut, dimana daun kopi memiliki potensi sebagai agen terapi dalam pengobatan tradisional dan berpotensi memiliki aktivitas antioksidan dan antibakteri karena kandungan fenolnya yang tinggi. Penelitian ini, bertujuan untuk mengetahui aktivitas antioksidan dan antibakteri yang terkandung pada daun kopi robusta.

Metode: Penelitian ini merupakan penelitian eksperimental skala laboratorium. Ekstraksi dilakukan dengan metode sonikasi, pengukuran total fenolik dengan metode *Folin-Ciocalteu* dan pengukuran total flavonoid dengan metode kolorimetri. Uji aktivitas antioksidan dengan metode DPPH serta uji aktivitas antibakteri dengan metode difusi silinder.

Hasil: Ekstrak daun kopi robusta memiliki aktivitas antioksidan sangat kuat dengan nilai IC_{50} 34,26 ppm, Nilai kadar total fenolik sebesar 219,46 mg GAE/g dan kadar total flavonoid 261,93 mg QE/g, serta menghasilkan diameter zona hambat tertinggi terhadap bakteri *Staphylococcus aureus* sebesar 11,1 mm dan terhadap bakteri *Escherichia coli* sebesar 9,5 mm pada konsentrasi 1000 ppm.

Simpulan: Daun kopi robusta memiliki aktivitas antioksidan yang sangat kuat dengan kadar total fenolik dan flavonoid yang tinggi serta memiliki kemampuan yang baik dalam menghambat pertumbuhan bakteri *Staphylococcus aureus* dan *Escherichia coli*.

Kata kunci: Daun kopi robusta, sonikasi, total fenolik, total flavonoid, antioksidan, antibakteri, *Staphylococcus aureus*, *Escherichia coli*