

AKTIVITAS ANTIJAMUR DAN ANTIBAKTERI MINYAK ATSIRI DAUN KENIKIR (*Cosmos caudatus* Kunth) TERHADAP MIKROBA PATOGEN PANGAN

INTISARI

Oleh:

Nur Afni Oktri Fiana

19/444200/TP/12577

Keamanan pangan perlu diperhatikan untuk menghindari terjadinya *foodborne diseases*. Kenikir (*Cosmos caudatus* Kunth) merupakan tanaman yang mudah tumbuh di Indonesia. Daun kenikir mengandung senyawa aktif flavonoid, polifenol, saponin, tanin, alkaloid, dan minyak atsiri. Senyawa tersebut sangat berpotensi sebagai pengawet alami dalam bidang pangan karena bersifat sebagai antimikroba. Penelitian ini bertujuan untuk mengetahui aktivitas antifungi dan antibakteri minyak atsiri daun kenikir terhadap mikrobial patogen pangan, yaitu *Aspergillus niger* FNCC 6114 dan *Aspergillus flavus* FNCC 6181, serta bakteri *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, dan *Staphylococcus aureus* ATCC 25923. Penelitian dilakukan dengan metode difusi sumuran dan cakram kertas untuk mengetahui besaran zona hambat. Kemudian, dilakukan pengujian *Minimum Inhibitory Concentration* (MIC) menggunakan metode *microdilution*, lalu uji *Minimum Fungicidal Concentration* (MFC) untuk jamur dan *Minimum Bactericidal Concentration* (MBC) untuk bakteri. Hasil penelitian menunjukkan bahwa *A. niger* dan *A. flavus* lebih sensitif terhadap minyak atsiri daun kenikir daripada bakteri. Bakteri Gram-positif lebih sensitif terhadap minyak atsiri daun kenikir daripada bakteri Gram-negatif. Nilai MIC terhadap *A. niger* FNCC 6114 dan *A. flavus* FNCC 618 berturut-turut adalah 6,25 µL/mL dan 12,5 µL/mL dengan nilai MFC sebesar 50 µL/mL pada kedua jamur tersebut. Kemudian, nilai MIC dan MBC berturut-turut sebesar 62,5 µL/mL dan 500 µL/mL terhadap *E. coli* ATCC 25922 dan *P. aeruginosa* ATCC 27853, serta 31,25 µL/mL dan 250 µL/mL terhadap *S. aureus* ATCC 25923. Kesimpulan penelitian ini yaitu minyak atsiri daun kenikir memiliki kemampuan antifungi dan antibakteri untuk mikrobial patogen pangan dan memiliki potensi untuk menjadi pengawet makanan.

Kata kunci: antifungi, antibakteri, minyak atsiri daun kenikir, *Aspergillus niger* FNCC 6114, *Aspergillus flavus* FNCC 6181, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, and *Staphylococcus aureus* ATCC 25923, MIC, MFC, MBC

ANTIFUNGAL AND ANTIBACTERIAL ACTIVITIES OF KENIKIR LEAVES (*Cosmos caudatus* Kunth) ESSENTIAL OIL AGAINST FOOD PATHOGENIC MICROBES

ABSTRACT

By:

Nur Afni Oktri Fiana

19/444200/TP/12577

Food safety needs more concerns to decrease foodborne diseases. Kenikir (*Cosmos caudatus* Kunth) plant is commonly found in Indonesia. Leaves of kenikir have active compounds such as flavonoids, polyphenols, saponins, tannins, alkaloids, and essential oil. Therefore, kenikir leaves have the potential to be used as natural antimicrobial preservative in food products. The aims of this study was to determine the antifungal and antibacterial activities of kenikir leaf essential oil against food pathogen *Aspergillus niger* FNCC 6114, *Aspergillus flavus* FNCC 6181, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, and *Staphylococcus aureus* ATCC 25923. Diameter zone of inhibition of kenikir leaf essential oil against bacteria and fungi was conducted using Kirby-Bauer disk diffusions method. The Minimum Inhibitory Concentration (MIC) test were evaluated use microdilution method and then evaluated Minimum Bactericidal Concentration (MBC) for bacteria and Minimum Fungicidal Concentration (MFC) for fungi. The results showed that *A. niger* and *A. flavus* were more sensitive to kenikir leaf essential oil than the bacterial strains. In addition, Gram-positive bacteria was more sensitive to kenikir leaf essential oil than Gram-negative bacteria. MIC against *A. niger* and *A. flavus* was 6,25 $\mu\text{L/mL}$ and 50 $\mu\text{L/mL}$. MFC against both fungi was 50 $\mu\text{L/mL}$. MIC and MBC value of 31,25 and 250 $\mu\text{L/mL}$ respectively were obtained for *S. aureus* ATCC 25923. Futhermore, MIC and MBC against *E. coli* ATCC 25922 and *P. aeruginosa* ATCC 27853 were $62,5 \pm 0 \mu\text{L/mL}$ and $500 \pm 0 \mu\text{L/mL}$. Therefore, Kenikir leaf essential oil showed antimicrobial activity against food pathogen and therefore could be applied as food preservative.

Keyword: antifungal, antibacterial, kenikir leaf essential oil, *Aspergillus niger* FNCC 6114, *Aspergillus flavus* FNCC 6181, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, and *Staphylococcus aureus* ATCC 25923, MIC, MFC, MBC