

ABSTRAK

Uswatun Hasanah

EFEKTIVITAS BAWANG PUTIH SEGAR DAN FERMENTASI SEBAGAI ANTIBAKTERI TERHADAP BAKTERI *Klebsiella pneumoniae* PENYEBAB INFEKSI SALURAN KEMIH

xvi + 107 Halaman + 11 Tabel + 13 Lampiran

Salah satu infeksi yang sering terjadi dan umumnya berasal dari bakteri kelompok *Enterobacteriaceae* adalah Infeksi Saluran Kemih (ISK). Bakteri yang paling sering ditemukan terdiri dari *Escherichia coli* (31%), diikuti oleh *Klebsiella pneumoniae* (24%), terakhir adalah *Enterococcus faecalis* (9%). Meningkatnya kasus resistensi antibiotik mendorong pencarian alternatif antibakteri alami, seperti bawang putih segar dan bawang putih fermentasi. Tujuan: Untuk mengetahui efektivitas perasan bawang putih segar dan bawang putih fermentasi dalam menghambat pertumbuhan *Klebsiella pneumoniae* penyebab infeksi saluran kemih. Penelitian ini menggunakan satu isolat bakteri yang berasal dari urine penderita ISK yang telah diidentifikasi menggunakan sistem otomatis VITEK 2 Compact. Metode: Menggunakan tiga kali replikasi dengan lima variasi konsentrasi yaitu: 60%, 70%, 80%, 90%, dan 100%. Diameter yang diamati adalah diameter zona hambat (mm) pada metode difusi cakram di media *Mueller-Hinton Agar*. Penelitian memperoleh hasil bahwa perasan bawang putih segar dan fermentasi mampu menghambat pertumbuhan *Klebsiella pneumoniae* pada seluruh konsentrasi. Semakin meningkat konsentrasi maka diameter zona hambat semakin besar. Bawang putih fermentasi memiliki diameter zona hambat lebih besar dari bawang putih segar pada semua konsentrasi, zona hambat paling tinggi di konsentrasi 100% yaitu 24 mm, lebih besar dari kontrol positif (amikasin). Kesimpulan: Hasil analisis menunjukkan bawang putih fermentasi mempunyai efektivitas antibakteri lebih besar dari bawang putih segar pada bakteri *Klebsiella pneumoniae*, dan konsentrasi 100% merupakan kondisi paling optimal. Bawang putih fermentasi berpotensi sebagai agen antibakteri alami dalam menghambat bakteri penyebab ISK.

Kata Kunci: Infeksi Saluran Kemih, *Klebsiella pneumoniae*, Bawang Putih Segar, Bawang Putih Fermentasi, Diameter Zona Hambat

Bacaan: 8 Buku dan 49 Jurnal (2016-2025)

ABSTRACT

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*EFFECTIVENESS OF FRESH AND FERMENTED GARLIC AS ANTIBACTERIAL AGENTS AGAINST *Klebsiella pneumoniae* CAUSING URINARY TRACT INFECTIONS*

xvi + 107 Pages + 11 Tables + 13 Appendices

Urinary tract infection (UTI) is one of the most common infections and is generally caused by bacteria belonging to the Enterobacteriaceae group. The most frequently isolated bacteria are Escherichia coli (31%), followed by Klebsiella pneumoniae (24%), and Enterococcus faecalis (9%). The increasing prevalence of antibiotic resistance has encouraged the search for natural antibacterial alternatives, such as fresh garlic and fermented garlic. Objective: To determine the effectiveness of fresh garlic juice and fermented garlic juice in inhibiting the growth of Klebsiella pneumoniae, a causative agent of urinary tract infections. This study used a single bacterial isolate obtained from the urine of a UTI patient, which was identified using the automated VITEK 2 Compact system. Methods: The experiment was conducted with three replications and five concentration levels: 60%, 70%, 80%, 90%, and 100%. The observed parameter was the diameter of the inhibition zone (mm), measured using the disk diffusion method on Mueller–Hinton Agar. The results showed that both fresh garlic juice and fermented garlic juice inhibited the growth of Klebsiella pneumoniae at all tested concentrations. As the concentration increased, the diameter of the inhibition zone also increased. Fermented garlic produced larger inhibition zones than fresh garlic at all concentrations, with the largest inhibition zone observed at the 100% concentration (24 mm), which was greater than that of the positive control (amikacin). Conclusion: The analysis showed that fermented garlic exhibited greater antibacterial effectiveness than fresh garlic against Klebsiella pneumoniae, and the 100% concentration was the most optimal condition. Fermented garlic has the potential to be used as a natural antibacterial agent to inhibit bacteria that cause urinary tract infections..

Keywords: Urinary Tract Infection, Klebsiella pneumoniae, Fresh Garlic, Fermented Garlic, Inhibition Zone Diameter

Readings: 8 Books and 49 Journals (2016-2025)