

ABSTRACT

Background: *Klebsiella pneumoniae* infections are frequently found in hospitals due to the bacterium's ability to survive on medical surfaces. One of the main challenges in managing *Klebsiella pneumoniae* infections is the emergence of antibiotic resistance, particularly to meropenem, which is commonly used to treat severe infections. Two diffusion methods are available to assess antibiotic sensitivity: the disc diffusion method and the well diffusion method. The disc diffusion method is the standard technique for sensitivity testing, while the well diffusion method is increasingly used as it is believed to produce a larger inhibition zone. Therefore, this study aims to compare the sensitivity outcomes of both diffusion methods.

Objective: To determine whether there is a difference in the mean inhibition zone diameter between the well diffusion and disc diffusion methods in testing *Klebsiella pneumoniae* sensitivity to meropenem.

Methods: This study is a pure experimental research using a Post-Test Only Control Group Design, involving a control group and an observation group. Data were analysed using the Independent Sample T-Test.

Results: The mean inhibition zone diameter using the well diffusion method was 28.3 mm, while the disc diffusion method yielded a mean diameter of 29.4 mm. The Independent Sample T-Test showed a significance value (Sig. 2-tailed) of 0.000 (< 0.05), indicating a statistically significant difference between the two methods.

Conclusion: There is a significant difference in the mean inhibition zone diameters between the well diffusion and disc diffusion methods for assessing *Klebsiella pneumoniae* sensitivity to meropenem.

Keywords: Well diffusion method, disc diffusion method, meropenem, *Klebsiella pneumoniae*

ABSTRAK

Latar Belakang: Infeksi *Klebsiella pneumoniae* sering terjadi di rumah sakit karena bakteri ini dapat bertahan di permukaan benda medis. Salah satu tantangan dalam penanganan infeksi *Klebsiella pneumoniae* adalah munculnya resistansi antibiotik seperti meropenem yang sering digunakan untuk infeksi berat. Terdapat dua metode difusi yang dapat digunakan untuk menguji sensitivitas antibiotik yaitu metode difusi cakram dan metode difusi sumuran. Metode difusi cakram merupakan teknik standar untuk menguji sensitivitas sedangkan metode difusi sumuran mulai digunakan karena diduga menghasilkan zona hambat yang lebih luas. Maka dari itu penelitian ini dilakukan untuk membandingkan sensitivitas kedua metode difusi.

Tujuan Penelitian: Untuk mengetahui apakah ada perbedaan rerata hasil zona hambat metode difusi sumuran dan cakram pada uji sensitivitas *Klebsiella pneumoniae* terhadap antibiotik meropenem.

Metode Penelitian: Jenis penelitian ini adalah penelitian eksperimen murni dengan rancangan Post - test Only Control Group Design yang melibatkan kelompok pembandingan (kontrol) dan observasi. Analisis data dilakukan dengan uji Independent Sample T-Test.

Hasil: Rerata diameter zona hambat metode difusi sumuran sebesar 28,3 mm. Rerata diameter zona hambat metode difusi cakram sebesar 29,4 mm. Hasil uji Independent sample t-test menunjukkan nilai signifikansi (Sig. 2-tailed) 0,000 (< 0,05) yang berarti ada perbedaan signifikan antara kedua metode.

Kesimpulan: Terdapat perbedaan rerata hasil zona hambat metode difusi sumuran dan cakram pada uji sensitivitas *Klebsiella pneumoniae* terhadap antibiotik meropenem.

Kata Kunci: Metode difusi sumuran, metode difusi cakram, meropenem, *Klebsiella pneumoni*