Uji Diagnostik Media Chrom Agar Col-Apse Sebagai Alternatif Metode Uji Kepekaan Bakteri Gram Negatif Terhadap Kolistin Dibandingkan Dengan Broth Microdilution = Diagnostic Test of CHROMagar Col-APSE Media as an Alternative Suceptibility Test Method of Gram Negative Bacteria to Colistin Compared with Broth Microdilution

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Abstrak

Pendahuluan: Peningkatan resistensi antibiotik global menjadikan kolistin sebagai pilihan terapi untuk infeksi bakteri pandrug resistant (PDR). Namun, karena efek nefrotoksiknya, pemilihan kolistin harus dilakukan secara hati-hati setelah diperoleh hasil uji kepekaannya. Sifat molekul kolistin yang kompleks menyebabkan uji kepekaan tidak dapat dilakukan dengan metode difusi cakram atau mesin otomatis yang tersedia, sehingga diperlukan metode lain yang praktis dan dengan hasil yang baik.
Metode: Sebanyak 120 isolat bakteri Gram negatif, terdiri dari Acinetobacter baumannii, Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, masing-masing berjumlah 30 isolat diuji kepekaannya terhadap kolistin. Metode uji menggunakan media CHROMagar Col-APSE dan sebagai baku emas digunakan metode broth microdilution (BMD). Hasil uji kepekaan dianalisis untuk mendapatkan sensitivitas, spesifisitas, positive predictive value, negative predictive value, positive likelihood ratio, negative likelihood ratio serta akurasi.
Hasil: Ditemukan sebanyak 20 isolat yang resisten terhadap kolistin dari 120 isolat yang diuji pada media CHROMagar Col-APSE. Diantara 20 isolat yang resisten kolistin tersebut, hanya 10 isolat yang resisten kolistin pada uji kepekaan dengan metode BMD. Didapatkan nilai sensitivitas 100% (95% CI, 72,25 – 100), spesifisitas 90,91% (95% CI, 84,07 – 94,9), Positive Predictive Value (PPV) 50% (95% CI, 29,93 – 70,07), Negative Predictive Value 100% (95% CI, 96,3 – 100), positive likelihood ratio 11 (95% CI, 9,04 – 13,38), negative likelihood ratio 0 (95% CI 0), dan nilai akurasi diagnostik 91.67% (95%CI, 85.34 – 95.41).
Kesimpulan: Uji kepekaan bakteri Gram negatif terhadap kolistin dapat dilakukan menggunakan CHROMagar Col-APSE, dengan interpretasi dengan hati-hati. Bila hasil uji kepekaan bakteri Gram negatif terhadap kolistin ditemukan resisten berdasarkan CHROMagar Col-APSE, maka hasil tersebut perlu dikonfirmasi lebih lanjut menggunakan metode BMD.
.....Introduction: The global increase in antibiotic resistance has made colistin a therapeutic option for infections caused by pandrug-resistant (PDR) bacteria. However, due to its nephrotoxic effects, the use of colistin must be administered carefully after susceptibility test results are obtained. The complex molecular structure of colistin renders susceptibility testing unsuitable using the disc diffusion method or automated systems. Therefore, alternative methods that are both practical and capable of delivering accurate and reliable results are required.
Methods: A total of 120 Gram-negative bacterial isolates, consisting of Acinetobacter baumannii, Escherichia coli, Klebsiella pneumoniae, and Pseudomonas aeruginosa with a total of 30 isolates were tested for susceptibility to colistin. The susceptibility testing was conducted using CHROMagar Col-APSE, with the broth microdilution (BMD) method serving as the gold standard. The results were analyzed to determine sensitivity, specificity, positive predictive value, negative predictive value, positive likelihood ratio,

negative likelihood ratio, and accuracy.
Results: A total of 20 colistin resistant isolates were identified out of 120 isolates tested on CHROMagar Col-APSE. Among these, only 10 isolates were confirmed as colistin-resistant by the broth microdilution (BMD) method. The analysis yielded a sensitivity of 100% (95% CI, 72.25–100), specificity of 90.91% (95% CI, 84.07–94.9), positive predictive value (PPV) of 50% (95% CI, 29.93–70.07), negative predictive value (NPV) of 100% (95% CI, 96.3–100), positive likelihood ratio of 11 (95% CI, 9.04–13.38), negative likelihood ratio of 0 (95% CI, 0), and diagnostic accuracy of 91.67% (95% CI, 85.34–95.41).
Conclusion: Colistin susceptibility testing for Gram-negative bacteria can be performed using CHROMagar Col-APSE, with careful interpretation. When colistin resistance is detected in Gram-negative bacteria based on CHROMagar Col-APSE results, these findings should be further confirmed using the broth microdilution (BMD) method.