

**TITLE:** EVALUATION OF THE PERFORMANCE OF SENSITIVITY DISKS FROM TWO DIFFERENT BRANDS ACCORDING TO THE BRCAST-EUCAST CRITERIA

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**ABSTRACT:**

Recently, the Ministry of Health of Brazil determined the use of BrCAST guidelines for antimicrobial susceptibility tests in all clinical laboratories in Brazil. With this implementation, there was a need for internal validation of disks with potency different from those previously used. The objective of this work was to evaluate the performance of sensitivity disks from two different manufacturers using reference strains. Sensitivity disks from two distinct manufacturers, designated A and B, were subjected to internal validation for routine use. All tests were performed as recommended in the BrCAST-EUCAST standards. At least 20 tests were performed for each antimicrobial/strain combination, with five daily replicates, five different suspensions and different plates. Commercial Mueller-Hinton agar and Mueller-Hinton F agar (MH Agar + defibrinated horse blood 5% and 20 mg / L  $\beta$ -NAD) prepared in house were used. The inhibition zone diameters obtained with the ATCC strains and sensitivity discs, and the mean diameters for each strain / antimicrobial combination were compared to the targets and ranges determined in BrCAST-EUCAST, version 8.0, valid from 08/08/2018. From a total of 900 tests, 480 (53.3%) were performed with brand A disks and 420 (46.7%) were performed with brand B disks. Concerning brand A, 50% of the averages of the readings coincided with the target; 25% presented a variation of  $\pm 1$ mm, 20.8% with  $\pm 2$ mm and 1 combination (30 $\mu$ g gentamicin in *E. faecalis* ATCC 29212) presented a mean variation greater than 2mm compared to the target value. For brand B, 38.1% of the averages of the readings coincided with the target, 38.1% had a difference of  $\pm 1$ mm in relation to the target, and 19.04% difference of  $\pm 2$ mm in relation to the target. A combination (100  $\mu$ g nitrofurantoin and *S. pneumoniae* ATCC 49619) presented a mean variation greater than 2 mm compared to the target. No diameter values occurred outside the expected limit. This study evidenced that there are differences of content of the disks from two manufacturers, although the indicated potency are identical. Manufacturer A's disks were the ones that most frequently presented mean diameters coincident with the target recommended by BrCAST-EUCAST. Despite the fact that the use of a single media manufacturer consisted of a limitation of the study, a significant difference in the potency of the disks comparing the two manufacturers was evidenced.

**Keywords:** BrCAST, validation, quality control, antimicrobial disk, disk-diffusion test

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