6th World Congress and Expo on **Applied Microbiology**
&
8th Edition of International Conference on **Antibiotics, Antimicrobials & Resistance**
&
12th International Conference on **Allergy & Immunology**
October 21-22, 2019 Rome, Italy

Last resort drug for multidrug resistant Klebsiella pneumoniae: Comparison of broth micro dilution with automated antibiotic susceptibility method

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Introduction: In this era of multi drug resistance the use of colistin as a last resort drug has become rampant. A joint committee by Clinical Laboratory Standard Institute and European Committee on Antibiotic susceptibility testing have recommended only Broth micro dilution (BMD) for susceptibility testing of colistin.

Aim: To compare the minimum inhibitory concentration (MIC) values of colistin obtained by BMD and automated VITEK-2 and thereby determine the susceptibility of colistin in the isolates tested.

Materials & Methods: A total of 544 consecutive Gram negative isolates were tested for colistin susceptibility by Vitek 2 AST- N281 cards (Biomerieux, Marcy L'Etoile, France) and BMD using Mikrolatest MIC Colistin kit (Erba Lachema s.r.o.,). An MIC of ≤2 µg/ml was considered as susceptible and >2µg/ml was considered as resistant. Acceptable rates for Essential agreement (EA), categorical agreement (CA) of ≥90% and very major errors (VME) and major errors (ME) of ≤1.5% and ≤3% respectively was considered acceptable.

Results: *K. pneumoniae* 391(71.9%, *E.coli* 47(8.6%), *A. baumanii* 53(9.7%) and P. aeruginosa 53(9.7%) were tested for colistin susceptibility. 309 (56.8%) isolates and colistin susceptible. The highest resistance for colistin was seen among *K. pneumoniae* followed by *A. baumanii*. Vitek 2 shared good CA of 92.64% with BMD but EA was only 88.2%. Higher rates of VME's (11.91%) were reported as compared to ME's (3.88%) with Vitek-2. The sensitivity, specificity, positive predictive value, negative predictive value of Vitek-2 compared with that of BMD were 88.09% (83.32-91.63%), 96.12% (93.34-97.76%), 94.52% (90.67-96.84%) and 91.38% (87.83-93.97%), respectively for resistant isolates.

Conclusion: The increasing resistance in colistin is a major concern. Automated AST, disc diffusion or agar dilution methods give variable susceptibility results and colistin should be prescribed only after performing AST using BMD. Strict antibiotic stewardship rules have to be practiced to curb indiscriminate use of colistin.