

ABSTRACT

Two hundred and twenty five Gram negative bacilli were isolated from urinary specimens sent to Microbiology laboratory, general hospital Kandy within a 3 month period. All the organisms were identified by using the Logic scheme of identification. Names and number of the organisms identified as follows. *Escherichia coli* 125, *Klebsiella pneumoniae* 38, *Klebsiella oxytoca* 16, *Enterobacter cloacae* 09, *Enterobacter aerogenes* 11, *Citrobacter diversus* 09, *Citrobacter freundii* 09 and *Serratia spp.* 08.

All these isolates were tested against antibiotics -ceftriaxone, ciprofloxacin and netilmicin by three susceptibility testing methods- Stokes' method, Break- point method and Minimum inhibitory concentration. *Escherichia coli* NCTC 10418 was taken as the control strain for all the three methods.

In Stokes' method antibiotic disc strength used were ceftriaxone 30 µg, ciprofloxacin 10 µg and netilmicin 30 µg. Break- point method was done by agar plate method. The strain was recorded as resistant or sensitive depending on whether the growth be present or not. MIC was determined by the agar plate method. MIC value was the lowest antibiotic concentration which inhibited the growth of the inoculum.

A correct result of sensitive or resistant was assigned to each strain/ antibiotic combination according to the following recommended MIC value for urinary isolates- ceftriaxone 2 µg/ml, ciprofloxacin 4 µg/ml and netilmicin 4 µg/ml. Discrepant results were assessed by the method suggested by Snell et al 1984 and a revised method. Comparison of results of MIC/ Break- point methods did not show any errors. However, Stokes' method showed total error ranging from 22% to 48%. Ciprofloxacin did not show change of error rates between the two calculation methods. Ceftriaxone and netilmicin showed low value for minor and high value for very major errors according to the revised method. This difference was due to many strains interpreted as Intermediate for ceftriaxone and netilmicin (ceftriaxone 83, netilmicin 80), while only 9 strains were Intermediate for ciprofloxacin. The Intermediate strains for ceftriaxone and netilmicin (51 for ceftriaxone and 27 for netilmicin) turned out to be Resistant by MIC/ Break- point method. When the Intermediate category was excluded from the study, there was a statistically significant difference between Stokes' method and MIC for ciprofloxacin and netilmicin (ciprofloxacin χ^2 4.076 and P value < 0.05, netilmicin χ^2 10.64 and P value < 0.001). Discrepancies of sensitivity results at species varied among different species for different antibiotics. The data illustrate that the susceptibility testing done by Stokes' method showed one error for every 4 strains tested.

MIC was done by two methods (Agar/ novel methods) to check the practicability of the novel method for MIC determination on different antibiotics for different organisms. The novel method was a broth method carried out on microtitre trays. The broth consisted of 1% glucose, 1% peptone water, 0.5% sodium chloride and 1% Andrade's indicator. With growth, fermentation of the sugar resulted in colour change from colourless to pink. Comparison of the two methods were studied on 225 urinary isolates for the three antibiotics used for the study. Only netilmicin showed acceptable difference of more than 1 dilution which was statistically significant (χ^2 20.906, $P < 0.001$)