

## **Determination of Identification and Antibiotic Resistance Rates of *Serratia marcescens* and *Providencia* Spp. from Various Clinical Specimens by Using Both the Conventional and Automated (VITEK2) Methods**

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**Abstract :** Objective: *Serratia* species are identified as aerobic, motile Gram negative rods. The species *Serratia marcescens* (*S. marcescens*) causes both opportunistic and nosocomial infections. The genus *Providencia* is Gram-negative bacilli and includes urease-producing that is responsible for a wide range of human infections. Although most *Providencia* infections involve the urinary tract, they are also associated with gastroenteritis, wound infections, and bacteremia. The aim of this study was evaluate the antimicrobial resistance rates of *S. marcescens* and *Providencia* spp. strains which had been isolated from various clinical materials obtained from different patients who belongs to intensive care units (ICU) and inpatient clinics. Methods: A total of 35 *S. marcescens* and *Providencia* spp. strains isolated from various clinical samples admitted to Medical Microbiology Laboratory, ANS Research and Practice Hospital, Afyon Kocatepe University between October 2013 and September 2015 were included in the study. Identification of the bacteria was determined by conventional methods and VITEK 2 system (bio-Merieux, Marcy l'etoile, France) was used additionally. Antibacterial resistance tests were performed by using Kirby Bauer disc (Oxoid, Hampshire, England) diffusion method following the recommendations of CLSI. Results: The distribution of clinical samples were as follows: upper and lower respiratory tract samples 26, 74.2 % wound specimen 6, 17.1 % blood cultures 3, 8.5%. Of the 35 *S. marcescens* and *Providencia* spp. strains; 28, 80% were isolated from clinical samples sent from ICU. The resistance rates of *S. marcescens* strains against trimethoprim-sulfamethoxazole, piperacillin-tazobactam, imipenem, gentamicin, ciprofloxacin, ceftazidime, cefepime and amikacin were found to be 8.5 %, 22.8 %, 11.4 %, 2.8 %, 17.1 %, 40 %, 28.5 % and 5.7 % respectively. Resistance rates of *Providencia* spp. strains against trimethoprim-sulfamethoxazole, piperacillin-tazobactam, imipenem, gentamicin, ciprofloxacin, ceftazidime, cefepime and amikacin were found to be 10.2 %, 33,3 %, 18.7 %, 8.7 %, 13.2 %, 38.6 %, 26.7%, and 11.8 % respectively. Conclusion: *S. marcescens* is usually resistant to ampicillin, amoxicillin, amoxicillin/clavulanate, ampicillin/sulbactam, cefuroxime, cephamycins, nitrofurantoin, and colistin. The most effective antibiotic on the total of *S. marcescens* strains was found to be gentamicin 2.8 %, of the totally tested strains the highest resistance rate found against to ceftazidime 40 %. The lowest and highest resistance rates were found against gentamycin and ceftazidime with the rates of 8.7 % and 38.6 % for *Providencia* spp.

**Keywords :** *Serratia marcescens*, *Providencia* spp., antibiotic resistance, intensive care unit

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