### Title: A comparison of Vancomycin resistance and high level aminoglycoside resistance in clonal enterococcus species isolated from Tabriz hospital’s

#### Abstract

**Background and Objectives:** In recent decades, enterococci are regarded as important pathogens and are the second leading cause of nosocomial infection. The enterococci pathogenesis has been linked to their ascending antimicrobial resistance. The purpose of this research was to study and investigate whether there was a considerable difference in high-level aminoglycoside resistance (HLAR) between vancomycin resistant enterococci (VRE) and vancomycin-sensitive enterococci (VSE). Nowadays, the prevalence of HLAR in Iran is between 15% and 55%, and glycopeptide resistance has become widespread in various geographical areas (specialy in Azarbaijan Sharqi province of IR.IRAN)

**Materials & Methods:** In this study, conducted between January and June 2011 in several hospitals of Tabriz, stool cultures and rectal swabs were taken from 174 hospitalized in-patients and out-patients who were at risk of VRE colonization and infection. Enterococci were isolated directly from Enterococcus selective agar plates supplemented with 6 µg/ml of vancomycin. HLAR was identified by two different methods: agar screening test and disk diffusion (Kirby-Bauer). Results were evaluated according to the guidelines made by the Clinical And Laboratory Standards Institute (CLSI), and findings were analysed statistically using the χ² test.

**Results:** Enterococcus species were isolated from 120 (68.96%) of the 174 rectal swabs and stool cultures from patients. VRE was found in 21 (17.5%) of isolates; that is, 12.06% of the patients were colonized by vancomycin resistant enterococci, and 37 (30.83%) isolates showed HLAR to streptomycin and gentamicin. HLAR was found in 15 of 21 VRE and 30 of 98 VSE strains. No considerable differences were found between the two methods used to determine the aminoglycoside resistance rates in the enterococcal isolates.

**Conclusions:** The simultaneous emergence of VRE and HLAR and high-level enterococcal resistance to penicillin shows a serious challenge for physicians treating patients with infections due to these micro-organisms. In this study, HLAR in VRE isolates was found to be more frequent than in isolates of VSE. The clinical importance of HLAR in VSE isolates, however, is much greater than in other strains because of the lack of synergy among glycopeptide antibiotics and aminoglycosides.

**Key words:** Enterococci, high-level aminoglycoside resistance (HLAR), vancomycin resistant enterococci (VRE), vancomycin sensitive enterococci (VSE), nosocomial infection

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