

## Phenotyping of Biofilm Formation among Clinical and Environmental Isolates of *Enterococcus faecalis*

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### ABSTRACT

**Background and objective:** Enterococci are normal microflora of the humans. They are identified as opportunistic pathogens and they are among the three major factors of hospital infections. Enterococci are able to form biofilms on the biotic and abiotic surfaces and this ability is one of the important factors to pathogenesis. The purpose of the present study was to evaluate biofilm formation and evaluation of antibiotic resistance among *Enterococcus faecalis* (E. f) isolates from clinical and environmental isolates in Tehran hospitals.

**Materials and methods:** In total, 90 isolates of *Enterococcus faecalis* including 58 clinical and 32 environmental isolates of (E.F) were collected from 2 hospitals in Tehran. All enterococcal species isolates were identified by species-specific PCR. Antibiotic resistance pattern of 90 isolates of (E. f) isolates was determined by disk diffusion method according to the CLSI guidelines. Biofilm formation of (E. f) isolates was evaluated by microtiter plates method.

**Results:** The highest resistant percents of clinical (E. f) isolates against tetracycline, erythromycin, co-trimoxazole, ciprofloxacin and gentamicin were 86%, 62%, 69%, 69% and 64%, respectively. Among environmental isolates the resistant percents were 75%, 44%, 25%, 22% and 25%, respectively. According to biofilm formation assay, 72% and 84.5% of clinical and environmental (E. f) isolates were positive, respectively. Samples that were able to form biofilms showed more antibiotic resistance than those that are not able to form biofilms.

**Conclusion:** The results of this study indicate high prevalence of antibiotic resistance and the ability of biofilm formation among *Enterococcus faecalis*. Considering the role of biofilms in increased antibiotic resistance and virulence, it is needed to carry out necessary measure to eliminate suitable conditions for biofilm formation which act as a shield against various conditions, including the host immune system and antibiotics.

**Key words:** *Enterococcus faecalis*, antibiotic, biofilm