

Biofilm Formation Due to the Proteome Changes Of Enterococcus Faecium in Response to Sub-Mic of Gentamicin

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Abstract : Background and Objective: Enterococcus faecium is a normal flora of the human gastrointestinal tract that causes infection in the host body under conditions such as biofilm formation, in which the use of antibiotics causes changes in these pathogenic mechanisms. In this study, we aimed to evaluate comprehensively the changes in E. faecium when exposed to sub-MIC of the gentamicin, especially the biofilm formation rate. Materials and Methods: For this study, the keywords "Enterococcus faecium", "Biofilm", and "Gentamicin" in the databases PubMed, Google Scholar, Sid, and MagIran between 2015 and 2021 were searched, and 14 articles were chosen, studied, and analyzed. Results: Gentamicin significantly had increased biofilm formation in most of the isolates in the studies. Increased expression of the genes (efaA and esp) and proteins involved in biofilm formation and decreased expression of the genes (gelE and cylA) involved in spreading and proteins involved in metabolism and cell division in E. faecium were the most significant cause of the biofilm formation, which were increased in sub-MIC gentamicin-treated situation. Conclusion: Inadequate use of gentamicin intensify biofilm formation of E. faecium, which can make the treatment of infections caused by this bacterium difficult.

Keywords : biofilm, enterococcus faecium, gentamicin, proteome

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