

## عنوان مقاله:

Meropenem inhibits *Acinetobacter baumannii* biofilm formation by downregulating *pgaA* gene expression

## محل انتشار:

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## خلاصه مقاله:

**Introduction:** *Acinetobacter baumannii* is the cause of nosocomial infections, primarily in intensive care units. The *pgaA* gene plays an essential role in biofilm formation, making it a promising target for developing new strategies to tackle *A. baumannii* infections. This study investigated the meropenem effect on *pgaA* gene expression and biofilm formation in *A. baumannii*. **Methods:** Over five months, 50 urine samples were taken from patients receiving medical care in the intensive care unit, of which 20 *A. baumannii* isolates were detected. Antibiotic susceptibility was determined with meropenem, imipenem, trimethoprim/sulfamethoxazole, ceftazidime, ciprofloxacin, tetracycline, amikacin, as well as gentamicin disks by the Kirby-Bauer method. The minimum inhibitory concentration (MIC) of meropenem was determined using the microdilution method. Biofilm formation was investigated through the tissue culture plate (TCP) technique and imaged using an atomic force microscope (AFM). Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) determined the expression level of the *pgaA* gene. **Results:** Antibiotic susceptibility testing revealed that all *A. baumannii* isolates were resistant to meropenem, imipenem, ciprofloxacin, and amikacin, and 71.42% were resistant to tetracycline. The MIC for meropenem could not be determined for isolates. Meropenem prevented biofilm formation in more than 70% of the isolates, and AFM imaging revealed thin biofilms. The RT-PCR showed that exposure to meropenem significantly decreased the *pgaA* expression gene in over 95% of the isolates ( $P < 0.0001$ ). **Conclusion:** Meropenem inhibited biofilm formation in most *A. baumannii* isolates by downregulating the *pgaA* expression, suggesting a potential role in preventing *A. baumannii* infections by reducing biofilm formation

## کلمات کلیدی:

*Acinetobacter baumannii*, atomic force microscope, Biofilm, *PgaA*, RT-PCR, Antibiotic resistance

## لینک ثابت مقاله در پایگاه سیویلیکا:

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