

Eudragit E100: Antibiofilm and Antivirulence Properties Allow Propose this Cationic Polymer as an Adjuvant to Conventional Antimicrobials in a Promising Approach against *Pseudomonas aeruginosa* Infections [†]

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Abstract: *Pseudomonas aeruginosa* is an opportunistic pathogen that exhibits its pathogenesis property due to several factors, and antimicrobial resistance is a substantial problem in its treatment. In this scenario, treatments targeting bacterial virulence have gained considerable interest. Eudragit E100® (Eu) is a cationic copolymer not fully characterized by antimicrobial properties. Previously, we demonstrated that Eu enhanced the efficacy of various antimicrobials against *P.aeruginosa* (planktonic) without exhibiting bactericidal action in itself. Here, we investigate the ability of Eu to prevent biofilm formation and inhibit the production of relevant virulence factors of multi-resistant *P.aeruginosa*. Eu concentration-dependent reduction in biofilm biomass was evidenced by crystal violet staining assay. Furthermore, a significant reduction in the production of pyocyanin, pyorubin, and proteases was observed and in bacterial motility. Reduced pigmentation observed by extraction with chloroform/HCl as compared to untreated control was recovered after 48-72 h of incubation in the polymer-free medium. Biofilm formation is a resistance mechanism reported for *P.aeruginosa*, and virulence factors play an important role in establishing and progressing infections. Therefore, the inhibition of biofilm in the initial stage and the reversible antivirulence properties exhibited by Eu allow justifying the use of this polymer as an adjuvant to conventional antimicrobials as a promising approach to prevent the spread of resistant infections by *P.aeruginosa*.

Keywords: *Pseudomonas aeruginosa*; pyocyanin; pyorubin; Eudragit E100; biofilms.

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Conflicts of Interest

The authors declare no conflict of interest.