

Effects of Gallic Acid on the Gene Expression of Drug Efflux System in *Pseudomonas aeruginosa* †

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Abstract: *Pseudomonas aeruginosa* is among the few drug-resistant organisms causing respiratory tract infection (pneumonia). Almost all strains of *P.aeruginosa* are comparatively resistant, even in the absence of R plasmids, too many antimicrobial agents, including tetracycline, β -lactams, fluoroquinolones, and chloramphenicol, than most gram-negative rods. This wide range of resistance has so far been thought to be mainly due to the outer membrane's low permeability in *P. aeruginosa*. Mex-proteins are the multidrug exporter proteins that have a vital role in drug ejection, which is the main reason for drug resistance. This limits therapeutic options. By inhibiting the multidrug-resistant efflux pumps, the activities of antimicrobial agents that are substrates for these proteins can be restored. Hence efforts are now taken to screen a few polyphenols, which are economical and less toxic. Among the several polyphenols, we have chosen Gallic acid, a trihydroxy benzoic acid, a type of phenolic acid found in gallnuts, witch hazel, oak bark, sumac, tea leaves, and some other plants. The polyphenol was evaluated as a potent efflux inhibitor. In this present study, the cells are treated with gallic acid, and its effects on gene expressions of Mex A and *rpsL* gene are observed.

Keywords: *Pseudomonas*; drug resistance; gallic acid; polyphenols; drug efflux; Mex proteins.

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Conflicts of Interest

The authors declare no conflict of interest.