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Modulation of Iron Uptake by Gallic Acid: Inhibiting the Biofilm Formation by *Pseudomonas aeruginosa* †

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Abstract: *Pseudomonas aeruginosa* is a Gram-negative pathogenic bacterium responsible for causing many diseases, including cystic fibrosis, nosocomial infections, and delayed wound healing. The bacterium readily attains biofilm within the infected region, confers resistance to antibiotics or other antibacterial treatments. One of the significant regulators of biofilm formation is iron, which influences inter-cellular communications, quorum sensing, and virulence properties. The primary target of the present study was to analyze how iron can modulate the biofilm formation by two strains of *Pseudomonas aeruginosa* with differential drug sensitivities. Moreover, restricting the iron uptake by introducing naturally occurring iron-quencher Gallic acid in the culture media can disrupt the biofilm formation, and the mechanisms by which pyomelanin protects the cell against oxidative damage were also studied.

Keywords: *Pseudomonas aeruginosa;* iron; gallic acid; biofilm; pyomelanin.

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Conflicts of Interest

The authors declare no conflict of interest.