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Effect of glutathione on the pyocyanin production in *Pseudomonas aeruginosa*

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Pyocyanin secreted by *Pseudomonas aeruginosa* is a redox active virulence factor, generating superoxide and H_2O_2 in host cells. Glutathione (GSH) is the most effective antioxidant for removing these reactive oxygen species in cells. However, many pulmonary diseases such as cystic fibrosis (CF) are associated with the lower levels of GSH in the epithelial lining fluid (ELF) than those in healthy individuals. Oxidative injury inflicted by *P. aeruginosa*, in CF lungs is one of the main causes to aggravating disease. We hypothesized that GSH plays an important role during *P. aeruginosa* mediated pathogenesis. To test this hypothesis, we constructed a glutathione-null *gshB* mutant. The further result demonstrated that the *gshB* mutant has less pyocyanin than the wild type PAO1 ($P<0.01$), while *P. aeruginosa* strains treated with GSH increased pyocyanin levels. This demonstrated GSH can activate the pyocyanin production; the results indicated that the expression of the *gshB* and *gor* gene was downregulated by *rhl* system. These findings may bring new insights into the molecular pathogenesis of *P. aeruginosa* infections and lead to novel therapeutic intervention for inhibiting *P. aeruginosa* infections.

Biography

Yani Zhang is a teacher of Northwest University in China. Dr. Zhang's knowledge in the free radical mechanism of water soluble glutathione's role in maintaining the antibiotic antimycin A effectiveness to resist bacteria *Pseudomonas aeruginosa* infection is undisputable wealth.

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