Environmental Factors Affecting Indole Production in *Escherichia coli*

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A variety of both Gram-positive and Gram-negative bacteria produce the intercellular signal indole in microbial communities. While biosynthesis of indole has been well-studied in *Escherichia coli*, environmental factors affecting indole production for this strain are less clear. This study demonstrates that the environmental cue pH is an important factor for indole production that further controls biofilm formation of *E. coli.* Moreover, *E. coli* produced a higher level of extracellular indole in the presence of the antibiotics, and the increased indole enhanced cell survival during antibiotic stress. In a mixed culture of *E. coli* and *Pseudomonas aeruginosa*, only a high proportion (above 95%) of *P. aeruginosa* could significantly degrade environmental indole. Additionally, we found that temperature is another important factor for indole production; *E. coli* produces and accumulates a large amount of indole at 50ºC, even at low cell densities. Overall, our results suggest that indole is a stable biological compound, and *E. coli* may utilize indole to protect itself against other microorganisms.