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**Role of stringent control in the pathogenesis of enteropathogenic *Escherichia coli* and its macrophage response**

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Like quorum sensing, stringent control is a global gene regulatory system present in bacteria. Under starved and stressful environments, a stringent response regulator ppGpp is rapidly synthesized and alters many cellular processes such as growth, metabolic activity and virulence. To define the role of stringent control in enteropathogenic *Escherichia coli* (EPEC), a major cause of infantile diarrhea, a ppGpp<sup>0</sup> mutant of the EPEC E2348/69 strain was created and examined its virulence attenuation. Our experimental analyses demonstrated that the lack of ppGpp in the EPEC E2348/69 strain: (1) Repressed gad expression and survival rate, (2) Depressed the expression of type-IV bundle forming pili (BFP), (3) Repressed the Locus of Enterocyte and Effacement (LEE) pathogenicity island encoding a functional type-III secretion system (TTSS), (4) Could not induce the EPEC-mediated killing of *Caenorhabditis elegans*, and (5) Altered the outer membrane structure and integrity. The whole genome-scale omics analyses revealed the 854 EPEC genes that were differentially expressed by ppGpp (cut-offs of >2 folds), including the LEE, bfp, per and gad operons. Moreover, the ppGpp<sup>0</sup> mutant altered the macrophage response when infected, compared to the wild type strain. Taken together, our results imply that ppGpp signaling plays an important role in both virulence and macrophage response in EPEC.

**Biography**

Jang Won Yoon has his expertise in molecular pathogenesis of zoonotic bacterial pathogens. His research interests include understanding the molecular mechanisms of enterohemorrhagic and enteropathogenic *E. coli* infections and their host interactions during infection. His recent research is on bacterial signaling molecules and questions how they involve bacterial pathogenesis and host responses.

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