RSD REGULATES THE PPGPP LEVEL IN ESCHERICHIA COLI

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Rsd has been known to make a complex with σ70 in stationary phase and functions as an anti-σ70 factor in Escherichia coli. This σ70 activity of Rsd is antagonized by the histidine-containing phosphocarrier protein HPr. Because the Rsd expression level increases in stationary phase compared to exponential phase, we assumed that Rsd might have additional physiological roles in E. coli. To elucidate other physiological processes regulated by Rsd, we conducted ligand-fishing experiment using Rsd as bait and we could detect the physical interaction of Rsd with SpoT, a typical stress response-related enzyme both in vitro and in vivo. Furthermore, we confirmed Rsd can interact with the C-terminal domain of SpoT using truncated SpoT proteins in vivo. Because the C-terminal domain is pivotal in regulating SpoT, we speculated this interaction might have potential physiological meanings in various stress responses in E. coli. From the competition test of HPr with SpoT in binding to Rsd, we found that HPr inhibits the formation of the Rsd-SpoT complex in vitro.

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