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Investigation of the Effect of Some Metals on Growth of *cpxA*, *cpxR*, *cya* and *crp* Mutant Strains

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Bacteria have a signal transduction called a two-component system in order to adapt to external environmental stimuli. Some functions of CpxA-CpxR and Cya-Crp from these systems have been identified. The Cpx system responds to stimuli such as pH, salinity, metals, lipids, and misfolded proteins, which cause membrane integrity to deteriorate. CRP is associated with many mechanisms such as multidrug resistance, biofilm formation and nitrogen assimilation. However, these systems are thought to have roles in different stress conditions besides their known tasks. Therefore, effects on the growth of the mutant strain in a rich medium containing metal were investigated. In this study, firstly MIC and MLC values of metals were determined on wild type and mutant strains. According to these determined values, growth of wild type and mutant strains were followed during 8 hours at 37°C in a metal containing medium. As a result, while *cpxA* and *cpxR* gene mutants has a resistance against Cd and Cu metals, susceptibility to Ni and Co metals was observed. Furthermore, it was determined that there is no role of *cpxA* and *cpxR* genes in Zn metal. In bacteria which the *cya* and *crp* genes were mutants, has a sensitivity in the Cd metals, but no effect of the Cu metal was determined on the growth. While the *crp* mutant was resistant to Co and Zn metals, *cya* mutant showed susceptibility. It was also determined that there was no role of *crp* while *cya* was sensitive in Ni metal.

Keyword: *E.coli*, CpxA/CpxR, Cya/ Crp, two component system, metals stress