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Role of catalytic residues of Mur protein from *Deinococcus radiodurans*

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For further understanding the precise structural features and functions of Manganese uptake regulator (Mur) in *Deinococcus radiodurans*, sequence alignment and site-directed mutagenesis technology were applied and mutations in three conserved amino acid residues of Mur were constructed. For exploration of the contribution of Mur in stress resistance of *D. radiodurans*, metal ions sensitivity, affection of manganese ion binding and stress resistance activity of each site mutation strains were analyzed and DNA binding activity of each mutant proteins were also examined. The results indicated that the three residues, including H77A, H78A and H79A, were all critical for Mur protein activity and played important parts in the manganese uptake regulation of Mur, meanwhile, these three residues acted significant roles in Mn2+binding activity of Mur. Electrophoretic mobility shift assay indicated that amino acid residue H78 and H79 were quite important for the DNA binding activity of Mur. The above experiments provide important theoretical references for understanding the extreme stress resistance of *D. radiodurans* and specific mechanism of Mur.

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