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**Study on improvement on the activity and replacement of active site metal of thermostable carboxypeptidase *Taq*.**

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Carboxypeptidase (CPase) *Taq* is a thermostable zinc-dependent metallo-carboxypeptidase and hydrolyzes the peptide bond at the C-terminus of peptides and proteins. We analyzed improvement on the enzyme activity of CPase *Taq* by addition of various metal ions. The enzyme activity was increased more than four times by 1 mM cobalt ion and almost three times by 1 mM calcium ion. However, the active center metal zinc ion did not affect the enzyme activity. In order to investigate whether the active center metal affect the enzyme activity, zinc ion which is occupied the active center of the enzyme was replaced by cobalt ion which activates the enzyme activity very effectively. Although the cobalt ion in the active center of the cobalt-substituted CPase *Taq* did not affect the enzyme activity, it could act as the native metal ion in the active center of the enzyme.