

Crystal structure and SOD activity of a hybrid lysozyme including an amino acid Schiff base copper complex

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Super Oxide Dismutase (SOD), which removes excess reactive oxygen species from the body, is also important enzyme for not only the development of cancer drugs but also understanding the phenomena of disease development and progression. In the study of SOD model metal complexes such as zinc(II), copper(II), iron(II) or manganese(II), we focused on a Schiff base copper(II) complex of *N*-salicylidene-amino acid containing alpha-amino acid moiety¹ to model structures as well as mimic functions of the native enzymes. However, few studies of hybrid proteins including SOD model complexes have been carried out so far to our knowledge.

In this study, we have synthesized a copper(II) complex incorporating *L*-threonine moiety² and characterized by means of UV-vis, CD, ESR spectra and CV measurements to compare SOD activity of the metal complex solely and the hybrid protein. The related copper(II) complexes potentially act as a photocatalyst for reduction of metal ions³. After coordinating to lysozyme, crystal structure of a hybrid lysozyme including the copper complex was determined at 0.92 Å to reveal coordination features and the related conformation of the

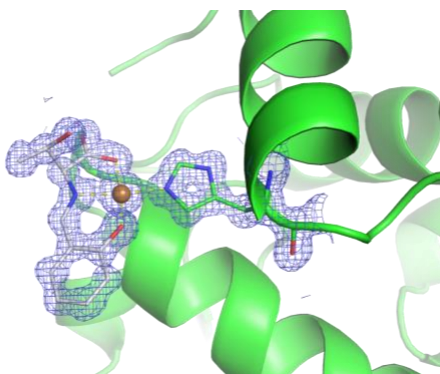


Figure 1. The copper complex coordinated to His15 of lysozyme. $2F_o - F_c$ electron density map is contoured 1.0 σ .

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