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Oxidative catalytic activity from the cysteinyl bolaamphiphile assembly with hemin cofactor**Chaemyeong Lee and Sang-Yup Lee**

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As a facile way to organize the amino acids in an ordered structure, self-assembly of amphiphilic molecules with amino acid motifs are very attractive. Here, we utilize the arrangement of amino acid segments of the amphiphilic molecules for the preparation of an enzyme-mimetic catalyst. Use of the amino acid as a hydrophilic segment of an amphiphilic molecule would lead the ordered arrangement of the amino acid on the surface of the assembled structure. To exploit this molecular arrangement, we synthesized cysteinyl bolaamphiphiles and dissolved them in water to induce self-assembly. The assembled structure was combined with hemin, a biological cofactor, to implement oxidative catalytic activity like the Horseradish Peroxidase (HRP). The prepared HRP-mimetic catalyst acts as a radical initiator together with hydrogen peroxide to promote the oxidation of the substrate. The performance of the catalyst was examined by the oxidation reaction of Acid Orange 7 (AO7), a well-known organic dye. The catalytic activity was analyzed from the color change of AO7. The self-assembled structure of cysteinyl bolaamphiphiles offered a protein-like platform on which various biological cofactors can bind to display biochemical activities.

Biography

Chaemyeong Lee has graduated from the Department of Biology of Chonnam National University. She has received her MS degree in Department of Chemical and Biomolecular Engineering at Yonsei University. She is currently a PhD candidate in the same university. Her main research interests include colloid, self-assembly nanomolecules and surface modification.

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