# The first protection-free synthesis of magnetic bifunctional L-proline as a highly active and versatile artificial enzyme : synthesis of imidazole derivatives.

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Streszczenie

l-Proline is a bifunctional versatile organocatalyst that could promote a variety of useful transformations. Some passive and dynamic interactions between this simple amino acid and different substrates, which are necessary to enzymatic reactions, have given it “the simplest enzyme” title. Herein we presented the first report on the synthesis of magnetic bifunctional l-proline as an artificial enzyme without requiring any protection/deprotection steps according to an operationally simple process. This magnetic nano-biocatalyst is a promising catalyst that in a case study was successfully applied for the synthesis of 2,4,5-trisubstituted and 1,2,4,5-tetrasubstituted imidazoles in the 70–99% and 60–90% yields respectively, which it could be extended to the variety of l-proline-based organic transformations. The synergic effect of bifunctional l-proline shell as catalytic active site and magnetite nanoparticles core, which could function as protein mimics endow it high efficiency, versatility, recoverability, reusability and good turnover frequency, which are necessary characters for artificial enzymes’ designing.

Słowa kluczowe

Bioorganic chemistry, Protection-free synthesis, magnetic bifunctional l-proline, Artificial enzyme, imidazole derivatives

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