# Phosphorus-Based Organocatalysis for Dehydrative Cyclization of *N*-(2-Hydroxyethyl)amides into 2-Oxazolines

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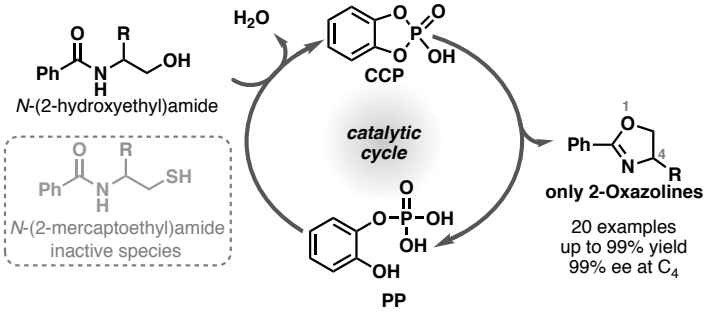
2-Oxazolines possess an extensive range of applications as significant naturally occurring pharmacophores,[1] building blocks for functional copolymers,[2] and optically active ligands.[3] Due to the vital potential of the heterocyclic units in natural products and pharmaceuticals, practical and cost-efficient synthesis of oxazolines that meets the economic and environmental demands has yet to be developed. Modern chemistry strives to establish approaches with high atom economy, for this subject has become a crucial concept in green chemistry.[4] To this end, catalytic synthesis of oxazolines by dehydrative cyclization of *N*-(2-hydroxyethyl)amides is an attractive method that only produces water as the by-product.

In this work, a metal-free, biomimetic catalytic protocol for the cyclization of *N*-(2-hydroxyethyl)amides was promoted by a 1,3,5-triazo-2,4,6-triphosphorine (TAP)-derived organocatalyst. This system features the minimum employment of the precatalyst and a broad substrate scope (up to 99% yield), which provides the relative 2-oxazolines with full retention of configuration at $C_4$. The mechanism of the reaction was vigorously studied, and the $^{31}$P NMR, HRMS, HPLC analyses, and *$^{18}$O*-labeling experiment gave valuable insights into the proposed mechanism. This organophosphorus catalytic protocol has proved to be highly chemoselective toward 2-oxazolines; furthermore, it can be utilized as a gram-scale (4 g) synthetic pathway with high efficiency.

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