N-(2-Bromoallyl)amines: synthesis and application in the construction of α-amino ketone and γ-amino acid scaffolds

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Abstract

This PhD thesis reports a convenient two-step approach to α-amino ketones and γ-amino acids involving cross-coupling and oxidative cleavage or hydrocarboxylation sequence. The cross-coupling reaction creates a divergent functionalization of the selected molecular platform, like *N*-(2-bromoallyl)amine, whereas the oxidative cleavage or hydrocarboxylation step establishes the carbonyl functionality. This strategy allows for an introduction of aryl/heteroaryl and alkyl groups, either through the Suzuki reaction with arylboronic acids or via dual photoredox/Ni-catalysis to install alkyl groups. The oxidative cleavage provided target α-amino ketones can be realized either by treating with ozone or by employing milder photochemical protocols involving oxygen or photoexcited nitroarenes as oxidants, while hydroacylation was solely realized by means of photoredox chemistry. Moreover, the possibility of the scalability of the developed protocols was reports, thus, along with their simplicity and generality, reported strategies provide access to structurally differentiated α-amino ketones and γ-amino acids that are inaccessible through other strategies, highlights the suitability of this approach for a wide range of applications across the different chemical sciences