

# SYNTHESIS OF AZIRIDINE N-METHYLENE PHOSPHONATES : REACTION SCOPE AND MECHANISTIC INSIGHTS



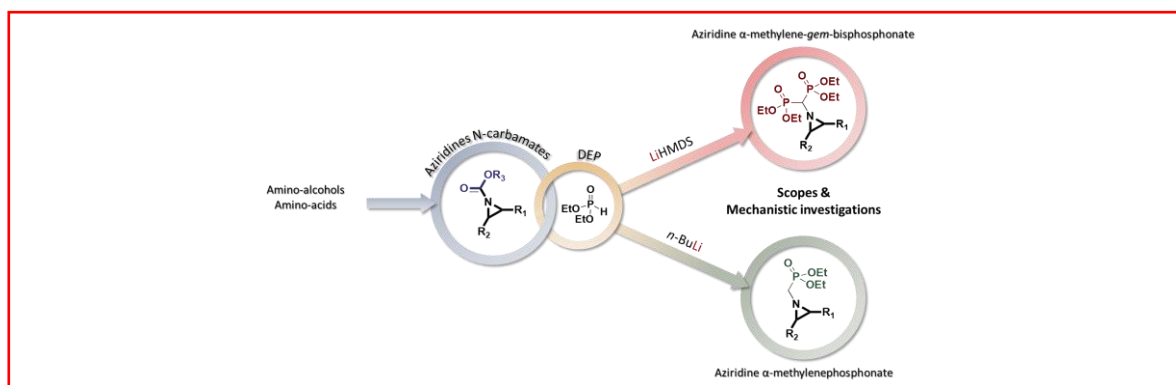
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Small three-membered ring heterocycles, such as aziridines, are widely studied as key building-blocks in organic syntheses. Due to their ring-strain, these versatile intermediates are able to endow regio- and stereoselective modifications affording chiral centers.<sup>1</sup> However, the association of a chiral aziridine and a phosphonate group, widely used in medicinal chemistry as bioisoster of organic phosphates, has been less explored.

Recently, an original synthetic pathway involving a *N*-carbamoyl aziridine treated by diethyl phosphite in presence of a lithiated base has been described by our team (Figure).<sup>2</sup> Thus, we observed that the nature of the resulting product is highly dependent of the nature of the base used and may either lead to  $\alpha$ -methylene-gem-bisphosphonate or  $\alpha$ -methylene phosphonate derivatives containing an aziridine motif.

In this work, a series of *N*-carbamoyl aziridines has been converted into the corresponding  $\alpha$ -methylene phosphonate aziridines, when using *n*-BuLi. The study of the reaction's scope and the analysis of by-products indicated that the transformation proceed via a unique and connected mechanism.



## References

1. R. Akhatr, S. A. R. Naqvi, A. F. Zahoor, S. Saleem, *Mol Divers*, **2018**, *22*, 447-501.
2. T. Cheviet, S. Peyrottes, *J. Org. Chem.*, **2021**, *86*, 3107-3119