

Green Synthesis of Nicotine Analogues via Cycloaddition Reactions

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Abstract : Nicotines are a group of compounds containing conjugated pyridine and pyrrolidine molecular segments. They are widely applied in medicine, pharmacy, and agriculture. Namely as researched treatment of Alzheimer, depression, Parkinson's, Tourette syndrome, general nervous and mental disorders. Furthermore, nicotine itself is used as a stimulant, animal repellent and was widely applied as an insecticide. In our work, we obtained nicotine analogues with possible applications in agriculture. The synthesis employed [3+2] cycloaddition (32CA) reactions, occurring between pirydyl-functionalised nitrones and conjugated nitroalkenes, that allowed us to fully regio- and stereoselectively obtain product. Moreover, cycloaddition reaction realizes rapidly in mild conditions with the full atomic economy, thus fitting into "green chemistry" trends.

Keywords : nicotine, isoxazolidine, 1-3-dipolar cycloaddition, green chemistry, biological and pharmacological activity

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