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Imidazo[1,2-*a*]pyridine-tetrazole hybrids: phytotoxic and photophysical properties

Victor H. J. G. Praciano,[1] Luan A. Martinho,[1] Sarah C. C. Oliveira,[2] João B. L. Martins,[3] and Carlos K. Z. Andrade[1*]

1) Instituto de Química, Laboratório de Química Metodológica e Orgânica Sintética, Universidade de Brasília, 70910-900 Brasília, DF, Brazil

2) Instituto de Ciências Biológicas, Departamento de Botânica, Laboratório de Alelopatia Alfredo Gui Ferreira, Universidade de Brasília, 70910-900 Brasília, DF, Brazil

3) Instituto de Química, Laboratório de Química Computacional (LQC), Universidade de Brasília, Brasília, DF, Brazil

***e-mail:** ckleber@unb.br

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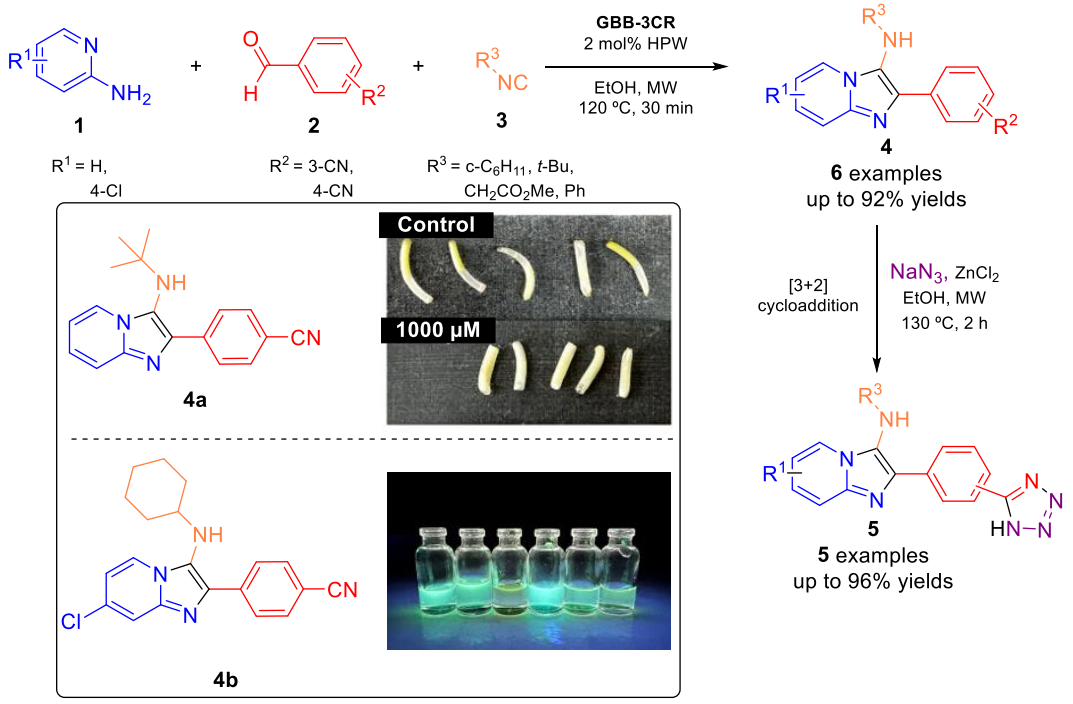
ABSTRACT

The synthesis of hybrids of imidazo[1,2-*a*]pyridine with substituted tetrazoles emerges as an interesting methodology as both are pharmacophoric groups of great commercial interest for the pharmaceutical industry.[1,2] In our synthetic route, imidazo[1,2-*a*]pyridines were initially synthesized via the phosphotungstic acid (HPW) catalysed Groebke-Blackburn-Bienaymé three-component reaction (GBB-3CR) using 2-aminopyridines, cyanobenzonitriles, and isocyanides, in ethanol under microwave heating.[3] Subsequently, the GBB-3CR adducts **4** were employed in [3+2] cycloaddition reactions with NaN_3 under a new approach using microwave heating and $ZnCl_2$ as catalyst to obtain the corresponding tetrazole hybrids. All synthesized compounds were screened in etiolated wheat coleoptile bioassays, as well as in seeds of *Lactuca sativa*, *Nasturtium officinale*, and *Solanum lycopersicum*, and some of them exhibited a good phytotoxic activity **(4a)**. Finally, photophysical properties of compounds **4** and **5** were studied along with computational calculations at B3LYP/6-31G(d,p) theory level. The theoretical values nicely agree with the experimental results **(4b)**.



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