

SEPTEMBER
23-27TH
2024

19TH BMO S

BRAZILIAN MEETING
ON ORGANIC SYNTHESIS
BENTO GONÇALVES, RS - BRAZIL

Towards greener MCRs: use of renewable reactants in Ugi and Passerini reactions

Alejandro Peixoto de Abreu Lima, Williams Porcal and Virginia López

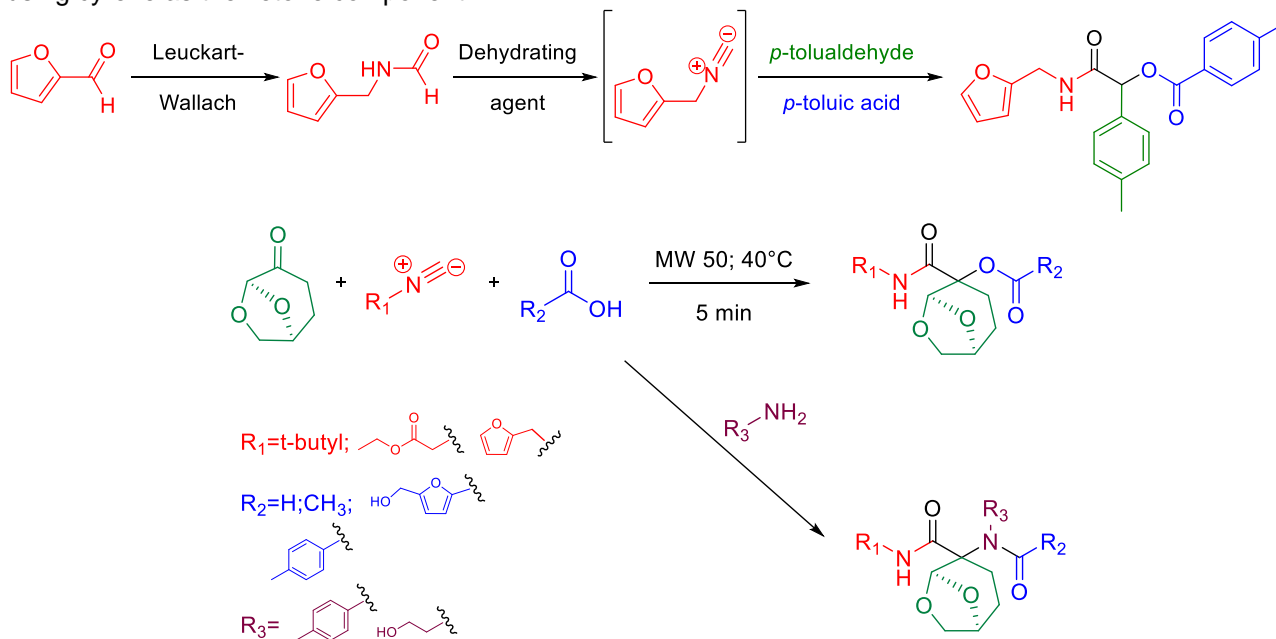
Laboratorio de Biología Vascul ar y Desarrollo de Fármacos, Instituto Pasteur de Montevideo, Departamento de Química Orgánica, Facultad de Química, Universidad de la República

*e-mail: apeixoto@fq.edu.uy

Keywords: Multicomponent Reactions, cyrene, green chemistry.

ABSTRACT

Multicomponent reactions (MCRs) such as Passerini and Ugi are invaluable in organic synthesis, enabling high molecular complexity in a single step. Considering the challenges associated with toxic reactants (isocyanides, aldehydes, etc.),¹ we demonstrate the use of biomass-derived reactants in 3MCRs and 4MCRs. We explored *in situ* produced, biomass-derived isocyanides² as Passerini reactants and we utilized cyrene³ (a chiral ketone) with commercial isocyanides examining diastereomeric outcomes and the effect of chiral catalysts. Reactions were performed in a Monowave 50 reactor to reduce heating times. These greener strategies yielded 8 products excluding diastereomers, optimizing the Passerini strategy with cyrene. Current efforts focus on the *in situ* generation of greener isocyanides and the synthesis of Ugi products using cyrene as the ketone component.



ACKNOWLEDGEMENTS

PEDECIBA postdoctoral fellowship

REFERENCES

- Dömling, A., Wang, W. & Wang, K. Chemistry and biology of multicomponent reactions. *Chem. Rev.* **112**, 3083–3135 (2012).
- Neochoritis, C. G., Stotani, S., Mishra, B. & Dömling, A. Efficient Isocyanide-less Isocyanide-Based Multicomponent Reactions. *Org. Lett.* **17**, 2002–2005 (2015).
- Martinho, L. A. *et al.* Cyrene: a very reactive bio-based chiral ketone in diastereoselective Passerini reactions. *Mol. Divers.* **28**, 111–123 (2024).