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Abstract

N-Aminoimidazole-2-Ones Peptide Mimics Synthesis and Applications †

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Abstract: Peptide secondary structures have privileged roles in molecular recognition and therapeutic potential. α-Amino lactam residues have been commonly used as conformational constraints to study peptide structure-activity relationship for drug discovery [1]. N-Aminoimidazolone (Nai) residues offer similar means for constraining peptide backbone geometry [1, 2]. In model peptides, (4-methyl)Nai residues were found to adopt the central position of β- and γ-turn secondary structures. The addition of substituents at the 4- and 5-positions of the Nai residues may be used to mimic side chain function and orientation [3, 4]. Our presentation will feature the synthesis and application of Nai residues in the study of peptide structure-activity relationships [5].

1. St-Cyr D.J., García-Ramos Y., Doan N.D., Lubell W.D. *Peptidomimetics I.* Springer; Cham, Switzerland: 2017. Aminolactam, N-Aminoimidazolone, and N-Aminoimdazolidinone Peptide Mimics; pp. 125–175.
2. Proulx, C.; Lubell, W. D. "N-Amino-imidazolin-2-one Peptide Mimic Synthesis and Conformational Analysis" *Lett.*, **2012**, *14*, 4552.
3. Poupart, J., Doan-Ngoc, D., Bérubé, D., Hamdane, Y., Medena, C., Lubell, W. D. "Palladium-Catalyzed Arylation of N-Aminoimidazol-2-ones towards Synthesis of Constrained Phenylalanine Dipeptide Mimics" *Heterocycles*, **2019,** *99*, 279-293
4. Poupart, J.; Hamdane, Y.; Lubell, W.D. "Synthesis of enantiomerically enriched 4,5-disubstituted N-aminoimidazol-2-one (Nai) peptide turn mimics" *J. Chem.* **2020**, *98*, 278–284.
5. Hamdane, Y.; Chauhan, S. P.; Vutla, S.; Mulumba, D.; Ong, H.; Lubell, W. D. *Submitted.*