SYNTHESIS OF DOUBLE NO-DONORS INCORPORATING FUROXAN AND AZASYDNONE RINGS

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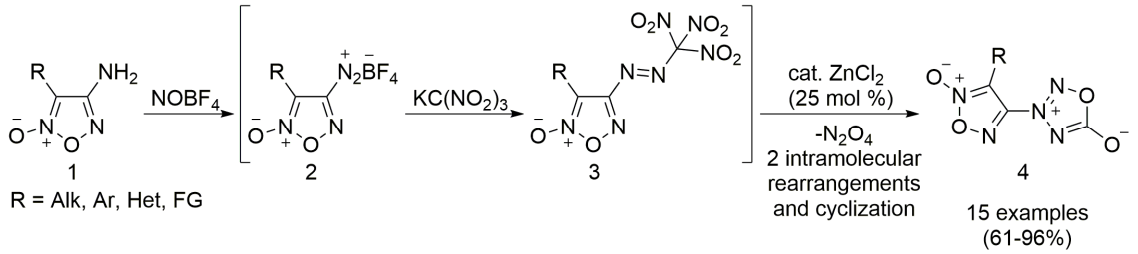
Nitric oxide (NO) is a key regulator of cellular metabolism, which affects various physiological and pathological processes in mammalians. It was estimated that high levels of NO can induce apoptosis leading to tumor cell death while low concentrations of NO are responsible for vasodilating and antiaggregant properties [1]. Thus, the creation of efficient methodologies for the construction of novel NO-donor systems is one of the rapidly developing field in organic and medicinal chemistry.

Among the variety of nitrogen-oxygen organic moieties capable to release NO under physiological conditions the furoxan (1,2,5-oxadiazole 2-oxide) scaffold has attracted considerable attention due to high stability of furoxan cycle under ambient conditions and absence of nitrate tolerance under continuous therapy [2]. On the other hand, azasydnone motif is known to possess NO-donor properties, however due to synthetic difficulties azasydnones are usually neglected. Herein, we present an efficient one-pot approach to double NO-donors incorporating furoxan and azasydnone motifs. This method includes diazotization of readily available 4-aminofuroxans **1** followed by azo coupling/double rearrangement sequence resulted in (furoxanyl)azasydnones **2** with excellent yields. Due to the presence of two different structural NO-donor motifs compounds **2** provide a promising NO-donor activity.



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[1] R. Cheng, L. A. Ridnour, S. A. Glynn, C. H. Switzer, W. Flores-Santana, P. Hussain, D. D. Thomas, S. Ambs, C. C. Harris, D. A. Wink in Nitric Oxide and Cancer. Prognosis, Prevention and Therapy (Ed.: B. Bonavida), Springer, New York, **2010**, pp. 3-20.

[2] L. L. Fershtat, N. N. Makhova, ChemMedChem **12**, 622 (2017).