



Synthesis of selenium-triazole-carbonitriles by organocatalytic cycloaddition of azidophenyl arylselenenides with benzoyl nitriles.

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INTRODUCTION

Nitrogen-containing selenides or diselenides in their structure are a special class of compounds and they have been employed in various organic transformations, for instance, asymmetric synthesis.¹ Consequently, the search of new and efficient methods synthetic, remains a challenge in organic chemistry.

In this context, selenium-containing 1,2,3-triazole compounds, are an interesting class of molecules and have a larger synthetic importance since they combine the well known activity of the 1,2,3-triazole core² with that of the selenium containing group.³

Other class of compounds widely explored are the nitriles, which are important synthetic intermediates used in the synthesis of pharmaceuticals, agrochemicals, pigments and as precursors in various transformations of groups of other features. Furthermore, the nitrile group is a unit found in natural products and bioactive molecules.⁴

Recently, our research group described the β -enaminone-azide cycloaddition for the synthesis of arylselenanyl-1*H*-1,2,3-triazole-4-carboxylates by reaction of azidophenyl arylselenenides with β -keto-esters.⁵ Thus, our continuing interest in organocatalytic cycloadditions for the synthesis of functionalized arylselenanyl-1,2,3-triazoles, prompted us to extend our protocol for the synthesis of nitrile-containing triazoles.

RESULTS AND DISCUSSION

According our previous work, the best reaction conditions to obtain the desired products were found using benzoyl nitriles **1** (0.25 mmol), azidophenyl arylselenenide **2** (0.275 mmol), Et₂NH (10 mol %) as organocatalyst, DMSO as solvent at room temperature under air atmosphere (Figure 1).⁵

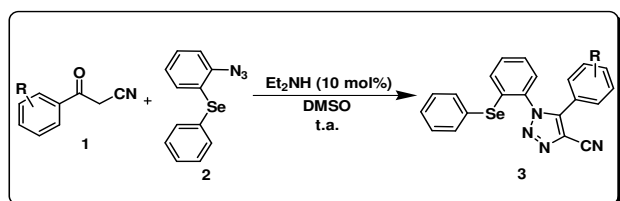
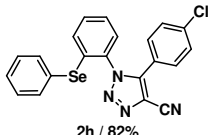
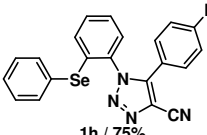
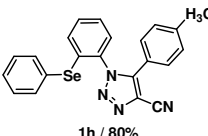
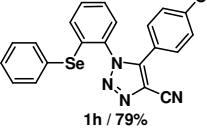
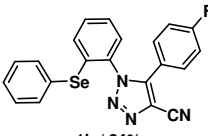
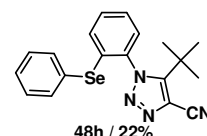


Figure 1. Best reaction condition.

Under these conditions, we performed some reactions varying the corresponding benzoyl nitriles

and a range of arylselenanyl-1,2,3-triazoles containing the nitrile group was synthesized in good yields.

Table 1. selenium-triazole-carbonitrile.

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CONCLUSION

In conclusion, we have described the organocatalytic β -enaminones-azide cycloaddition of azidophenyl arylselenenides with benzoyl nitriles using catalytic amount of Et₂NH in DMSO as solvent and a range of selenium-triazole-carbonitriles were synthesized in good yields.

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