Directed Magnesiation of Haloaromatics Oxazolines using the Tetramethylpiperidylmagnesium Reagents TMPMgCl.LiCl

Batista, J.H.C., Santos, F.M., Silva, S.C., Oliveira, A.R.M., Clososki, G.C

Faculty of Pharmaceutical Sciences of Ribeirão Preto, University of São Paulo

**e-mail corresponding author*: joaohenrique08@yahoo.com.br

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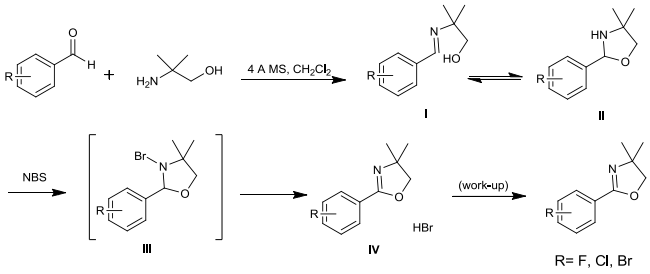
INTRODUCTION

The metallation of aromatics is a convenient approach to the functionalization of unsaturated scaffolds[1]. Especially polyfunctional aryl halides are of high importance as agrochemicals, pharmaceuticals and building blocks[2]. Recently, we have reported the preparation of highly reactive magnesium TMP amides such $TMP_2Mg.2LiCl$ and TMPMgCl.LiCl[3] which proved able to magnesiate several aromatics under mild conditions.

The aim of this work is to report the application of magnesium amides for the magnesiation of several haloaromatics oxazolines and subsequent reactions with electrophiles.

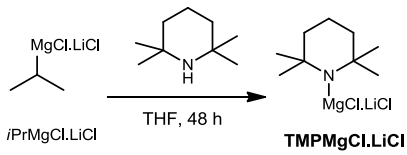
RESULTS AND DISCUSSION

The oxazolines were prepared by condensation of aldehydes with aminoalcohol, providing the products with yields ranging from 75 to 90% (Scheme 1).



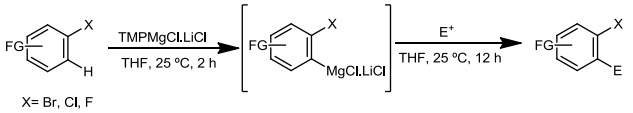
Scheme 1: Preparation of oxazolines

The mixed Li/Mg base was obtained through the direct reaction of 2,2,6,6-tetramethylpiperidine (TMPH) with i-PrMgCl.LiCl (Scheme 2).



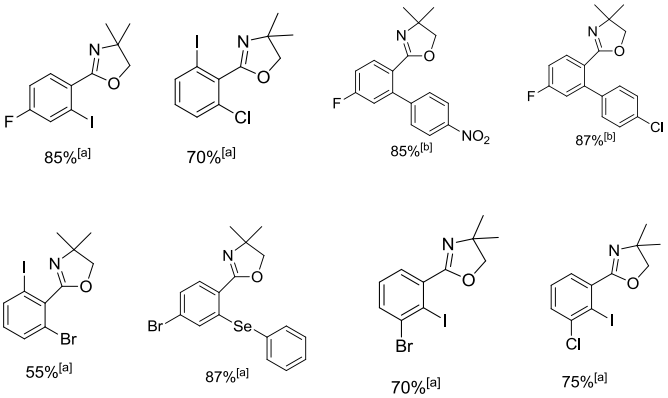
Scheme 2: Preparation of TMPMgCl.LiCl

We have examined the magnesiation of oxazolines haloaromatics. With these substrates a magnesiation using TMPMgCl.LiCl is achieved at room temperature with two hours, leading to the expected *Grignard* reagents with excellent yield.



Scheme 3. Magnesiation of oxazolines

Table 1. Some products obtained after directed magnesiation of oxazolines



[a] Yield of isolated, analytically pure product.
[b] A transmetalation with $ZnCl_2$ (1.1 equiv.) and Pd-catalyzed cross-coupling using 2 mol% $Pd(dba)_2$ 4 mol% and tfp were performed.

CONCLUSION

We have performed the metallation of haloaromatrics oxazolines using TMPMgCl.LiCl under mild conditions. The resulting Grignard reagents can be combined with a large number of electrophiles to provide attractive new building blocks, particularly functionalized derivatives, with good to excellent yield.

ACKNOWLEDGEMENTS

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