

VISIBLE-LIGHT-MEDIATED α -OXYGENATION OF 3-(*N,N*-DIMETHYLAMINOMETHYL)-INDOLES TO ALDEHYDES

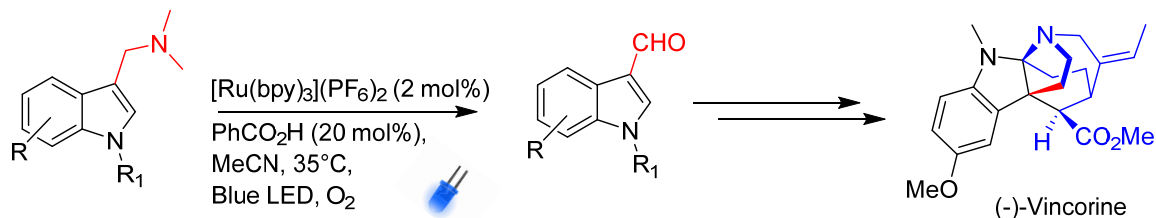
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Introduction: Currently, visible-light photoredox catalysis has aroused great attention in organic chemistry. The development of novel photoredox systems with a wide range of application in organic synthesis is very popular. The new methodology of aldehyde synthesis seems to be very important because a lot of natural products or bioactive compounds contain carbonyl group in its structure.

The direct oxidation of the amines into the appropriate carbonyl compounds is much less developed than typical oxidation of alcohols to the carbonyl group.[1] Most of the oxidation reactions require harsh reaction conditions, metallic reagents, hypervalent iodine, peroxides, etc.[2]

Results: We have developed a visible-light-mediated oxygenation of indole tertiary amines into corresponding aldehydes, using photoredox system (Scheme 1). Based on Stern-Volmer plots, series of quenching experiments mechanism is proposed. Mentioned method allows to obtain indole aldehyde derivatives and can be used for synthesis of natural compound such as (-)-Vincorine with biologically active properties.[3]



Scheme 1. Visible Light Oxidation of *N,N*-Dimethylaminomethyl derivatives and formal synthesis of (-)-Vincorine

[1] M. Hudlicky, *Oxidation in Organic Chemistry*; ACS Monographs 186, Washington, D. C. 1990

[2] T. Punniyamurthy, S. Velusamy, J. Iqbal, *Chem. Rev.* **2005**, *105*, 2329–2363.

[3] Stanek, F. , Pawłowski, R. , Mlynarski, J. and Stodulski, M., *Eur. J. Org. Chem.*, **2018**, 6624–6628.