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Organic Synthesis By natural Catyalyst : An Eco-friendly

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ABSTRACT

In present study the natural catyalyst is the main component in the development of eco-friendly compound and eco-friendly reaction nature. We have to study the natural catyalyst is used for synthesis of organic compound because content of main catyalyst (citric acid) is present in natural catyalyst, that's why natural catyalyst (Citrus Limon) is used in reaction of Amidoalkyl Naphthol. Citrus Limon catalyzed the reaction efficiently without using any other harmful organic reagents or solvents moreover this method have the advantages of shorter reaction time solvent-free condition easy workup and cost effective. The demand of eco-friendly benign procedure promoted us to develop a safe alternative method for the synthesis of amidoalkyl naphthol.

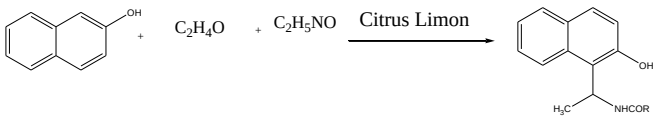
Keywords : Citrus Limon, amidoalkyl naphthol, One-Vat synthesis, Environmentaly-free condition.

I. INTRODUCTION

One vat multi-component reaction have attracted a considerable attention in organic synthesis as they can produce the target products in a single operation without isolating the intermediates and thus reducing the reaction time and energy Multi component contribute to the requirement of an ecofriendly process by reducing number of synthetic step, energy consumption, less amount of solvent or no. of. solvent and waste material production. One such example is the synthesis of 2-amidoalkyl 2-methyl naphthol. Compound bearing 1, 3 amino oxygenated functional group are ubiquitous to a variety of biologically important natural product and potent drug including a no of nucleosides antibiotic and HIV protease inhibitors such as ritonavir and lipinavir Amino alkyl naphthol have attracted strong interest to their useful biological and pharmacological properties such as adrenoceptor blocking, antihypertensive, and say $Ca2^{+}$ channel blocking activities. Amidoalkyl methyl naphthol are also important synthetic building block and are used as precursor for the synthesis of 2-aminomethyl-2-naphthol derivatives, which exhibit important cardiovascular activity. The hypotensive and bradycardiac affects of these compounds have been evaluated.

Therefore, to overcome these limitations the discovery of new eco-friendly and easily available catalyst with high catalytic activity and short reaction time for the preparation of amidoalkyl naphthol is still desirable. The demand of eco-friendly benign procedure promoted us to develop a safe alternative method for the synthesis of amidoalkyl naphthol

Reaction



II. METHODS AND MATERIAL

Experimental

General procedure for the synthesis of amido alkyl napthol-

To a mixture of 2-naphthol 0.5mmol, aldehyde 0.5mmol, amide 0.5mmol and citric acid 5mol %was added the mixture was stirred at 120^{0}c in an oil bath. After completion of reaction the crude product was cooled to room temperature and wash with ice-cold water and stirred well. The catalyst is soluble in water and was remove from the reaction mixture. The pure product was obtained by recrystallization using ethyl alcohol.

III. RESULTS AND DISCUSSION

For our initial study reaction of acetaldehyde, acetamide, 2-naphthol and Citrus Limon as a catalyst was consider as a standard model reaction. Model reaction in the absence of catalyst did not lead to product formation. It means intervention of a catalyst was must for initiation of the reaction. So the catalytic activity of Citrus Limon as an Organopromotor was investigated on the model reaction under environment free condition. To evaluate the temperature effect on reaction rate, the model reaction was performed at different temperature 118^0 C, 120^0 C, 82^0 C, 85^0 C temperature of 120^{0}c found to carry out the reaction efficiently in 90 % yield. Any further increase in temperature failed to enhance the reaction rate substantially, while lowering the temperature below 120^{0}c slow down the reaction rate. To know the exact requirement of catalyst for the transformation , we investigated the model reaction using different concentrations of citric acids such as 0.5% and 5% of catalyst was found to be optimum. Decreasing the amount further did not improve the yield.

IV. CONCLUSION

In summary, we have developed an efficient, mild and clean synthetic method for the synthesis of amidoalkyl naphthols. In this method, attempt has been made to exploit catalytic activity of Citrus Limon in organic synthesis. Citrus Limon catalyzed the reaction efficiently without using any other harmful organic reagents or solvents moreover this method have the advantages of shorter reaction time solvent-free condition easy workup and cost effective.

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