

GREEN SYNTHESIS OF NEW BETTI BASES IN LIQUID AND SOLID PHASES

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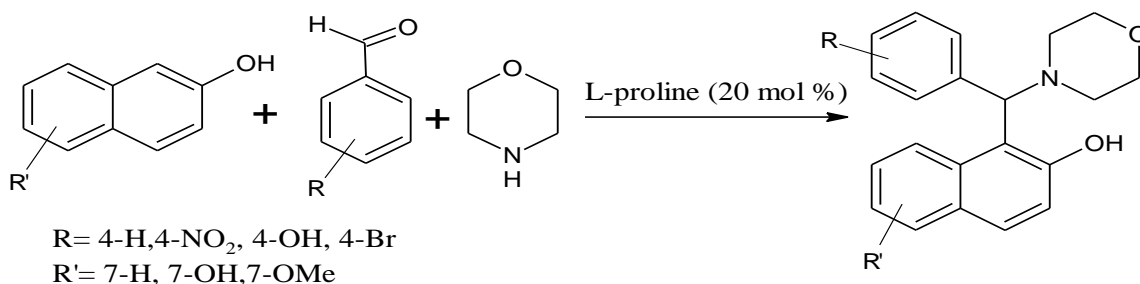
Introduction & Objectives:

Free-solvent techniques hold a strategic position, as solvents are very often toxic, expensive, and problematic to use and to remove [1]. Developing Multicomponent reaction is also one of the most important processes for the rapid generation of diverse and complex organic molecules in a single reaction step.

Furthermore, a growing interest has been shown in the use of microwave irradiation in organic synthesis. Microwave free-solvent synthesis offers advantages for reducing hazardous explosions and removal of the high boiling solvents from the reaction mixtures [2]. The coupling of microwave heating mode with the use of mineral solid support such as alumina, silica gel has been intensively developed [3].

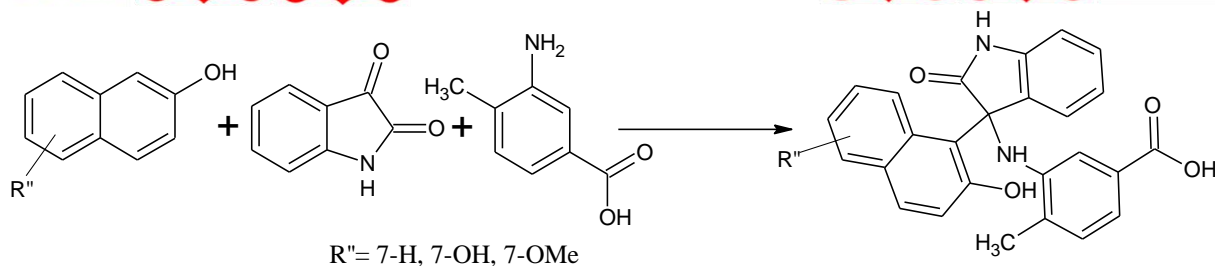
The aim of this work is to synthesize some Betti bases. The reactions were first conducted in liquid phase under free solvent (reflux) and then on solid support (such as: alumina, silica gel...) both in oven at 70°C and in microwave oven at 800 W.

Results and Discussion:



In liquid phase: the desired products were obtained in good yields (54 -76%) in 1 hour. However **in solid phase, in oven:** the Betti bases were obtained in long reaction times (7 to 10 hours) and low to average yields (21-48%). **In the microwave oven:** The reaction time was greatly reduced (from 10 h to 20 min) giving low to average yields (24-35%).





It was worth mentioning that the Betti reaction using isatin as the carbonyl compound does not occur in liquid phase (reflux), so only the solid phase reaction is explored. It appeared that alumina did not constitute a good solid (gives very low yields). Furthermore the oven and microwave oven, the products were obtained in average yields (33-47%).

Conclusion:

In conclusion a rapid, efficient, simple, one-pot procedure for the synthesis of Betti bases has been achieved by different methods. Good to low yields were obtained in a less reaction time (except which was prepared on oven) following a simple and usual workup. On the other hand, the Betti reaction on solid phase, under microwave deserves to be re-explored in the future, by changing the catalyst, the solid phase, and improving the extraction of the final products in order to increase yields.

Keywords: Multicomponent reaction, Betti bases, Solid phase, Liquid phase, Microwave oven, L-proline.

References

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