SOLVENT-FREE SYNTHESIS OF CHALCONE BY ALDOL CONDENSATION CATALYZED BY SOLID SODIUM HYDROXYDE (NaOH)

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ABSTRACT

SOLVENT-FREE SYNTHESIS OF CHALCONE BY ALDOL CONDENSATION CATALYZED BY SOLID SODIUM HYDROXIDE (NaOH)

Chalcones represent a group of compounds with interesting biological activities that are formed from an aldol condensation between a benzaldehyde and an acetophenone in the presence of NaOH as a catalyst. Although traditionally synthesized using aqueous sodium hydroxide in organic solvents, in this study three different chalcones were synthesized using a solventless procedure. The solvent-free synthesis of three chalcones was carried out by grinding the benzaldehyde (3-nitro, 4-methoxy, 4-chloro) and 4-methoxyacetophenone in the presence of solid sodium hydroxide with a mortar and pestle. Chalcones were obtained in high yields (76-86%), high purity, and shorter reaction time (within five minutes). The results seemed to indicate the success of the solvent-free aldol synthesis which is simple, highly efficient and eco-friendly. For comparison, the three chalcones were also synthesized by the traditional aldol condensation catalyzed by aqueous sodium hydroxide in ethanol afforded lower yield (62-72%) and required longer reaction time (62-75 min).