

**MICROWAVE-INDUCED CLAY-MEDIATED  
PREPARATION OF IMINES: ONE-POT SYNTHESIS OF  $\beta$ -LACTAMS**

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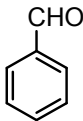
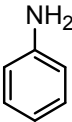
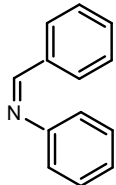
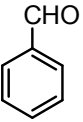
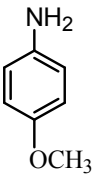
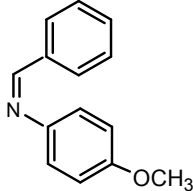
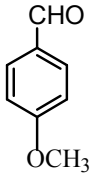
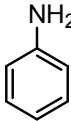
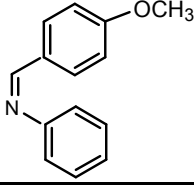
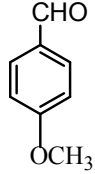
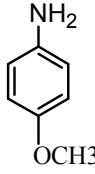
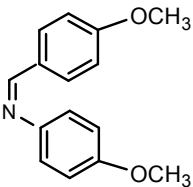
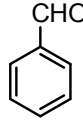
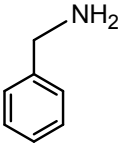
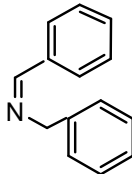
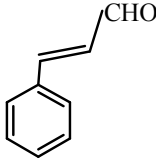
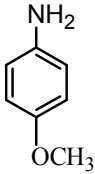
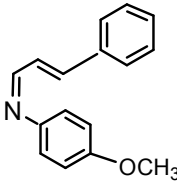
**Abstract:** Microwave-induced montmorillonite-mediated preparation of imines has been achieved in the absence of solvent and these have been converted to  $\beta$ -Lactams in a one-pot operation.

**Keywords:** Microwave, Clay, Solventless,  $\beta$ -lactams

**Introduction:** Research on the synthesis of  $\beta$ -lactam has been the subject of intense interest for more than 60 years because of their medicinal properties. Our research has uncovered crucial anticancer activities of  $\beta$ -lactams derived from polyaromatic compounds.<sup>1,2</sup> We have been working on clay-mediated reactions<sup>3,4</sup> and microwave chemistry.<sup>5,6</sup> During the course of this investigation, we became interested in the preparation of  $\beta$ -lactams in a one-pot operation.<sup>7</sup> In this communication, we describe that synthesis of a few imines by reacting aromatic aldehydes and aromatic amines in the presence of clay using microwave-induced reaction. The resulting imines have also been converted to  $\beta$ -lactams in excellent yields.

**Experimental:** Reaction of aromatic aldehydes and aromatic amines was performed in a domestic microwave oven in the presence of montmorillonite clay K10. The on-off cycle present in the microwave oven was used to irradiate the mixture each one minute interval and the mixture was irradiated for approximately 4 minutes. TLC of the reaction mixture was performed and compared with known authentic imines and it was found that the reaction was completed. The mixture was then brought at room temperature. Acid chlorides were then added to the reaction mixture followed by N-methylmorpholine. The reaction was then again irradiated for 4 minutes. Dichloromethane was then added to the reaction mixture after cooling and clay was filtered off. The organic component was then washed with dilute hydrochloric acid solution, water and sodium bicarbonate. The organic layer was then dried. TLC and NMR of the crude reaction mixture indicated the formation of  $\beta$ -lactams. The crude NMR was analyzed to determine the ratio of the isomeric  $\beta$ -lactams.

Table 1: Synthesis of Imines in the presence of clay using microwave-induced reactions

Aldehydes	Amines	Imines	Yield (%)
			90
			90
			88
			88
			80
			80



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