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Chapter - 3

One-Pot Green Method for the Synthesis of Oxazine Derivatives under Aqueous Medium

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Chapter - 3

One-Pot Green Method for the Synthesis of Oxazine Derivatives under Aqueous Medium

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Abstract

A simple, convenient, and environmentally friendly method for the synthesis of 1,3-oxazine derivatives has been developed under aqueous conditions. The reaction proceeds via one pot multicomponent condensation of α or β - naphthol, aromatic aniline and formaldehyde using polyphosphoric acid as green catalyst. The current protocols are simple, requires less reaction time and provides high yields. Non-polluting synthetic procedures are used to avoid harmful effects of organic solvents on the environment.

Keywords: 1,3-oxazine derivatives, one-pot multicomponent condensation, polyphosphoric acid, aqueous medium, green method

1. Introduction

The environmentally friendly and economically inexpensive synthetic procedures have been developed to reduce the harmful effect of organic solvent on the environment. The main objective of this work was to avoid the use of harmful solvents and catalysts. Nowadays, synthetic chemists are facing the major challenges in chemistry due to the limited green options for the synthesis of heterocycles. Synthesis of biologically active compounds containing nitrogen and oxygen in a ring from readily available reagents is the main objective of organic synthesis ^[1]. The multi-component condensation reactions have attracted attention during the last few years to increase the number of organic transformations because it is a rapid and efficient method for the formation of molecules in a single-step ^[2]. Multicomponent reactions (MCRs) are useful for C-C and C-heteroatom bond formations and also helpful to synthesize small molecules with structural diversity ^[3]. The MCRs combined with convergence and atom economy, this type of reaction has many applications in organic and Medicinal Chemistry ^[4]. The design and synthesis of new heterocycles which has medicinal and biological activity in cost and time effective manner is a goal ^[5-11].