



University of Zabol
Graduate school
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The Thesis Submitted for the Degree of Master of Science (In the field of Organic Chemistry)

Novel green synthesis of amino acid-based imines, their application in the synthesis of heterocyclic compounds and the study of their biological properties

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Abstract:

Imine derivatives are the products of bimolecular condensation reaction between primary amines and carbonyl containing compounds. This functional group widely presents in the skeleton of compounds with diverse chemical and biological features. Their chemical applications vary from asymmetric catalysis, pigments synthesis and crystalline state study to corrosion protection. In addition, some reported biological characteristics include anticancer, anti-inflammatory, antiviral, antituberculosis agents and pesticides. L-arginine is a necessary amino acid which numerous studies have been accomplished about its characteristics and uses recently. Some of these pieces of research comprise of antifungal, antibacterial, anticancer properties and serine protease inhibition.

In the present research, a novel green synthetic method has been introduced for the preparation some novel L-arginine based imine derivatives and their antibacterial and antifungal bioactivities have been studied. The optimum synthetic protocol comprised of using a potassium carbonate catalyzed aqueous solution and/or an uncatalyzed mixture of water:glycerol (1:1). All of the reactions were accomplished with good to excellent yields without any laborious work-up step with only simple washing with ethanol-water mixtures. Then, all products were subjected to disc diffusion test in order to evaluate their possible antibacterial and antifungal activities against four bacterial and two fungal strains. All synthesized derivatives showed a remarkable inhibitory activity against at least 4 out of the six strains under study.

Keywords: Imines, L-Arginine, Green Synthesis, Antibacterial and Antifungal properties