



RESEARCH PAPER

SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL EVALUATION OF SOME IMIDAZOLE BEARING HYDRAZONES AS POSSIBLE ANTIMICROBIAL AND ANTHELMINTIC AGENTS

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Received: Mar 18, 2016 / Revised: Apr 02, 2016 / Accepted: Apr 03, 2016

Hydrazone have been of considerable scientific interest due to their momentous biological activities. A number of imidazole bearing hydrazone derivatives were synthesized and characterized in the present investigation. Synthetic protocols were undertaken to react benzil with benzaldehyde and ammonium acetate in the presence of sulphanilic acid as catalyst to yield suitable imidazoles. Further, in the proceeding steps, reactions of imidazole were carried out to yield ester, then hydrazide and finally the hydrazone derivatives. Spectral methods were used to characterize the synthesized compounds appropriately. The synthesized hydrazones were screened for antibacterial, antifungal, anthelmintic activities. Most of the synthesized compounds showed moderate to good biological activities.

Key words: Imidazoles, Hydrazides, Hydrazones, Antimicrobial activity, Anthelmintic activity.

INTRODUCTION

A wide variety of antibiotics have been developed to combat against bacterial infections. But unfortunately, in the absence of an effective platform for antibiotic discovery and after years of misuse and overuse of antibiotics in humans and animals, bacteria are becoming antibiotic resistant. The fast resistance of bacteria against antibiotics has become a prevailing medical problem over the world (Desai *et al* 2014; Abdel-Aziz *et al* 2015). Treatment options for these infections are often insufficient particularly in immune compromised patients. In the past few decades, the extremely increasing multi-drug resistant microbial infections have become a serious health issue. The discovery of novel antimicrobial compounds still remains a challenging task to the medicinal chemistry

research scientists (Kethireddy *et al* 2015).

In the field of heterocyclic chemistry, nitrogen containing heterocyclic compounds such as imidazoles have occupied an inimitable position due to their versatile properties in chemistry and pharmacology and their presence in, pharmaceuticals and natural products (Dahiya and Pathak, 2007; Dahiya, 2008; Dahiya *et al* 2008; Mehta and Pathak, 2011; Kumar, 2011; Verma *et al* 2013). Imidazole nucleus is privileged scaffold commonly found in biomolecules and amino acids such as biotin, purine, pilocarpine, histamine, histidine alkaloids, and other alkaloids (Vichier-Guerre *et al* 2014; Patel *et al* 2014; Tang *et al* 2014). These compounds possess various biological activities such as nitric-oxide synthase inhibition, antidepressant, anti-parasitic, antifungal,