Synthesis of Carbonohydrazideamide, Carbonohydrazidethioamide with potential biological activity

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INTRODUCTION

Semicarbazones, carbonohydrazides, thiosemicarbazides and semicarbazides are reported to possess a wide range of biological activities, such as antimicrobial, fungicidal and antitumor. [1-6] However, to the best of our knowledge, carbonohydrazideamide and carbonohydrazidethioamide are not reported anywhere, despite the structural similarity with the functional groups mentioned above (figure 1). With the aim of developing a route for biologically active compounds, herein we report the synthesis of a series of Carbonohydrazideamide and carbonohydrazidethioamide.

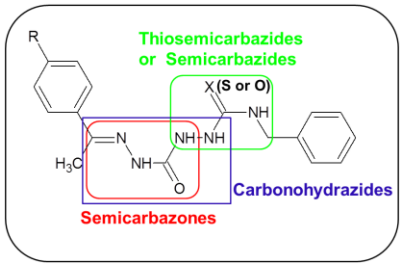
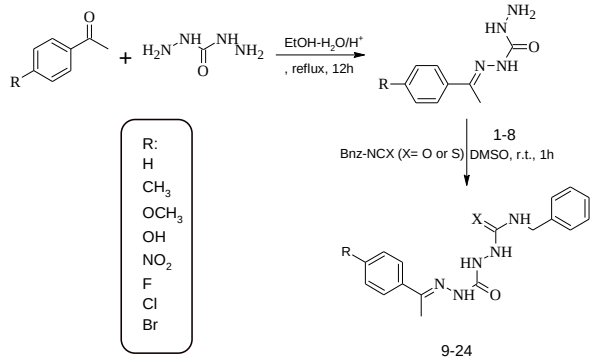


Figure1. Carbonohydrazideamide or carbonohydrazidethioamide and its relationship with other functional groups.

RESULTS AND DISCUSSION

The general schematic representation describing the routes of syntheses is presented in Scheme 1. Carbonohydrazides (1 - 8) were prepared by the condensation of carbohydrazide with respective acetophenone in the presence of concentrated hydrochloric acid in water-ethanol for 12 h.[7] Hydrazinacarboamidas (9-16) and hidrazinacarbotioamidas (17-24) are synthesized by reaction of carbonohydrazides (1-8) with benzyl isocyanate or benzyl isothiocyanate in DMSO for 1 h.

The structures of the products were confirmed by ^{1}H and ^{13}C NMR spectra. The intermediates 1-8 and 9-24 were isolated with 80-98% yields.



Scheme 1. Synthesis of Carbonohydrazideamide or carbonohydrazidethioamide

CONCLUSION

Compounds 1-24 were obtained with high yields, among these, the compounds 9-24 are inedited and will be evaluated as antimicrobial, fungicidal and antitumor.

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