

*Dedicated to Professor Alexandru T. Balaban on the occasion of his 85th anniversary.
The authors acknowledge the pioneering and outstanding contributions of Prof. Balaban to several
fields of chemistry, including the nitrogen-containing heterocycles*

CONTRIBUTIONS TO SYNTHESSES OF PYRROLO[1,2-*a*]BENZIMIDAZOLE DERIVATIVES *via* 1,3-DIPOLAR CYCLOADDITION REACTIONS

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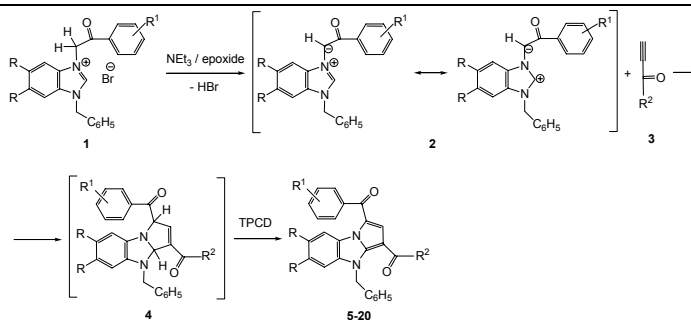
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New pyrrolo[1,2-*a*]benzimidazoles were easily obtained in good yields *via* 1,3-dipolar cycloaddition reactions of benzimidazolium ylides with non-symmetrical electron-deficient alkynes in the presence of an oxidant such as tetrapyrindinecobalt(II)dichromate using different acid acceptors to generate benzimidazolium ylides from the corresponding 3-phenacyl-benzimidazolium bromides. New synthesized pyrrolo[1,2-*a*]benzimidazoles were fully characterized by multinuclear NMR spectroscopy and X-Ray crystallography.



INTRODUCTION

Pyrrolo[1,2-*a*]benzimidazole, an interesting heterocyclic scaffold, was widely investigated due to its crucial role in biologically important molecules. Many pyrrolo[1,2-*a*]benzimidazole compounds revealed remarkable biological and pharmacological properties, mainly as antitumor agents against various human cancer cells.¹⁻⁹

Several synthetic routes have been reported for the synthesis of pyrrolo[1,2-*a*]benzimidazole derivatives.^{10,11} The classical multistep synthesis of pyrrolo[1,2-*a*]benzimidazoles *via* 1,3-dipolar cycloaddition reaction of benzimidazolium-ylides with electron-deficient alkynes or alkenes starts with the preparation of benzimidazolium salts followed by their *in situ* conversion into benzimidazolium-*N*-ylides in the presence of a

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