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Synthesis of Some Sulfur Bridged Pyrimidines, Pyrazoles and Imidazoles

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Abstract: The preparation of some sulfur bridged substituted pyrimidines, pyrazoles, and imidazoles is reported in this communication.

Keywords: Pyrimidine, pyrazole, imidazole.

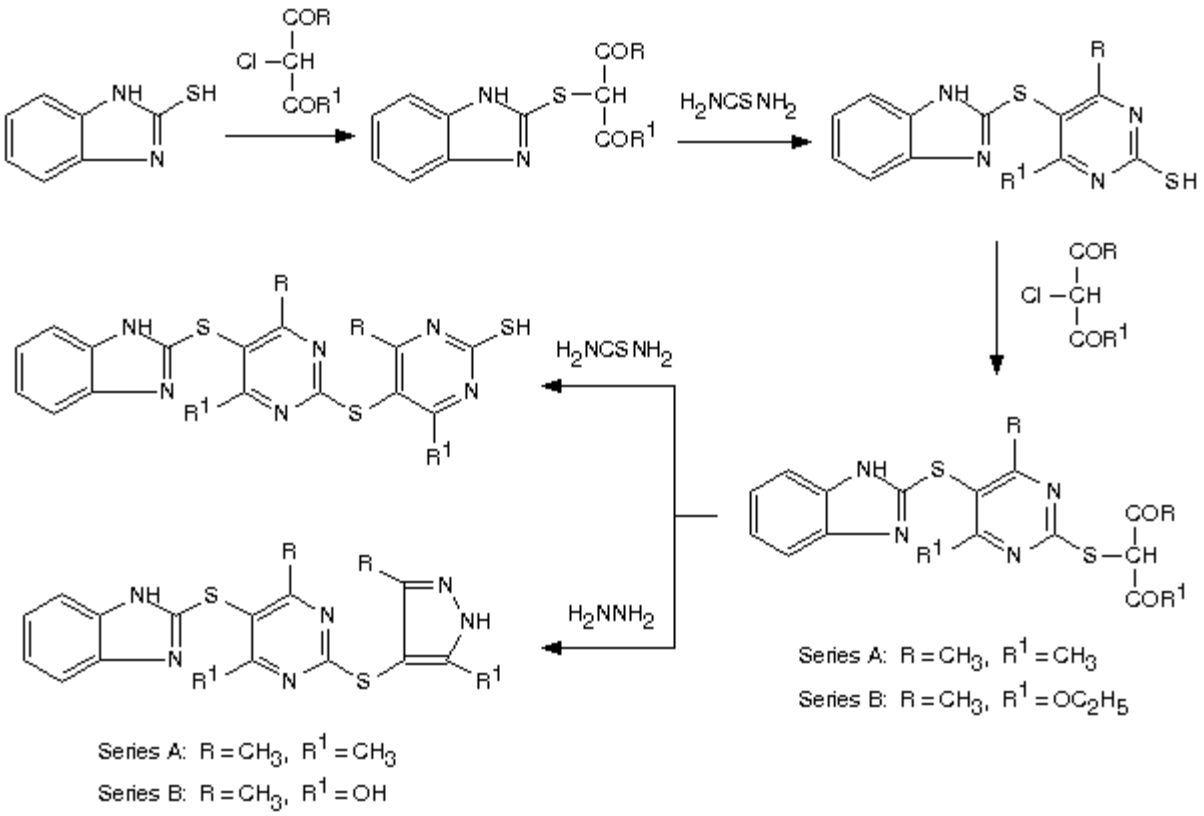
Introduction

Heterocyclic compounds containing two nitrogen atoms in the molecule represent a very important group of organic compounds because many of them exhibit significant biological activity, including antimicrobial and pharmacological effects. These properties predetermine them inter alia for the preparation of wide spectrum of medicinal drugs.

Results and Discussion

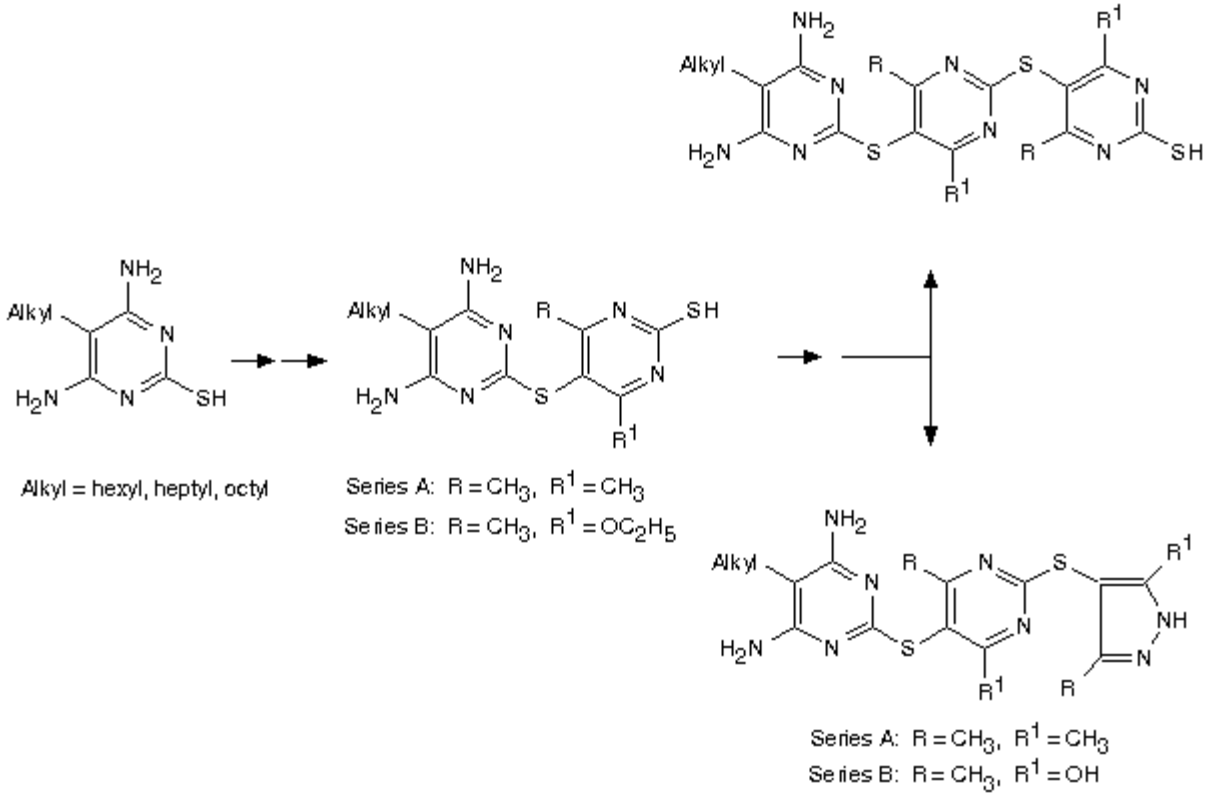
Starting from 2-benzimidazolethiol, we have synthesized several sulfur bridged pyrimidines, imidazoles, and pyrazoles, applying the cyclization reactions of beta-dicarbonyl intermediary compounds with thiourea or hydrazine.

Scheme 1



Essentially the same synthetic route was applied starting from 5-alkyl-4,6-diamino-2-pyrimidinethiol (alkyl = hexyl, heptyl, octyl).

Scheme 2



All final heterocyclic compounds were crystalline and simple crystallization was sufficient to obtain pure products. Their structure was determined on the basis of ^{1}H-, ^{13}C-NMR, and mass spectral data. These compounds were submitted for biological activity testing.

Conclusion

The described synthetic procedure is high yielding and can be general for the preparation of further analogical substituted heterocycles. Those heterocycles with terminal pyrimidinethiol are liable to the repeatable application of reaction sequence given in Scheme 1 to give rise of "poly-heterocycles" bridged with sulfur.

Experimental Part

Some of the intermediary compounds have been already published [1-3]. Cyclization reactions with hydrazine were performed according to described method [4].

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References and Notes

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