CHLORACYLATION OF CARBAZOLE.

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Annotation: for the first time in the article, the carbazole chlorination reaction was described in different ways. The result of chlorination depends on the nature of the solvent, the temperature and the duration of the vacuum.

Keywords:carbosol, chloracylation reaction, temperature, vacuum duration

INTRODUCTION

Heterocyclic compounds, according to their name, contain cycles in which there are one or more heteroatoms-atoms elements other than carbon.

Currently known heterocyclic systems (heterocycles) with a wide variety of atoms, but those containing nitrogen, oxygen and sulfur are the most studied. The importance of the chemistry of heterocycles is enormous. This is also evidenced

by the fact that two-thirds of the published work in organic chemistry has been done

exactly in this area. The chemistry of heterocycles is one of the most exciting and important areas of organic chemistry.

Suffice it to say that from the most famous and widely used drugs more than 60% are heterocyclic compounds.

The presence of a heteroatom in the cycle introduces a unique originality into chemical properties and determines the specifics of synthesis methods.

The variety of heterocyclic compounds is due to the possibility of variations:

a) the number and nature of heteroatoms in a molecule, b) the ring size, c) the degree of unsaturation, which determines the presence or absence of aromaticity.

In this paper, we consider the most important aromatic five-membered heterocycles containing one heteroatom - oxygen, sulfur and nitrogen: mono- and bicyclic (consisting of a heterocyclic and condensed benzene ring with it) and their derivatives.

The most important task of this work is to teach students methods for the synthesis of various five-membered heterocycles from the main classes of organic compounds that they have studied previously. Thus, students will learn the synthesis of furan, thiophene, pyrrole and their derivatives from 1,4-

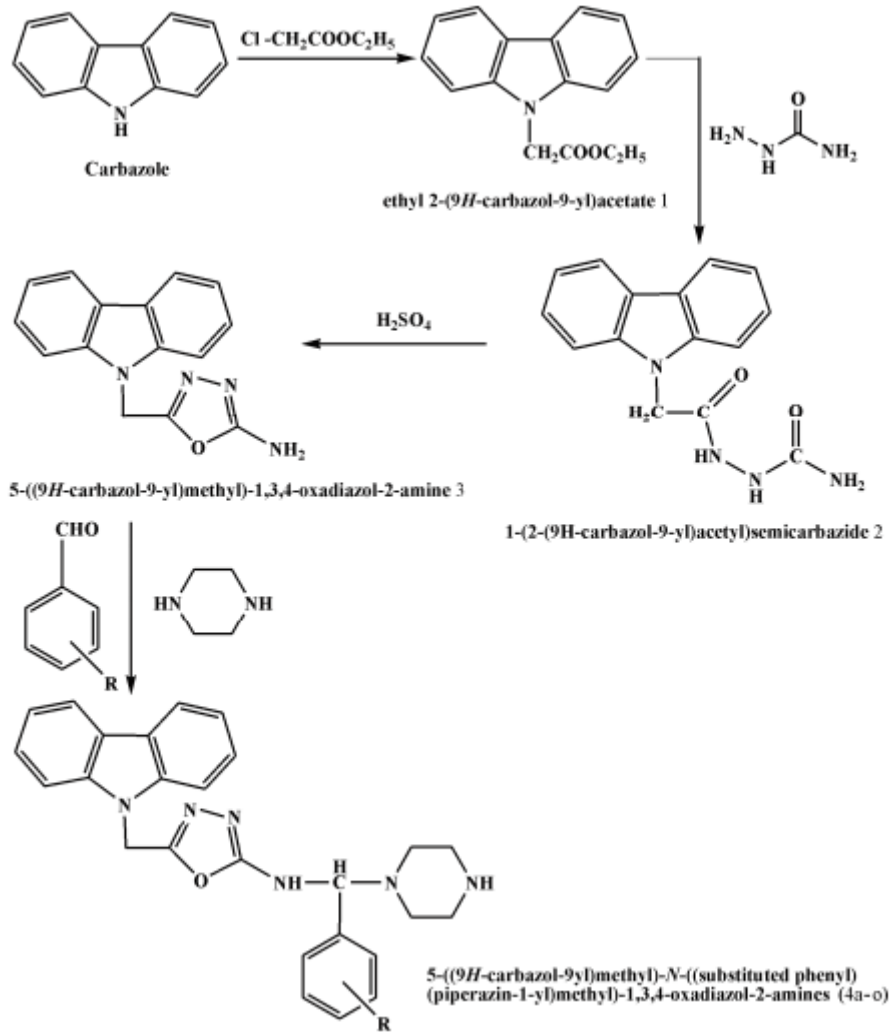
dicarbonyl compounds (Paal-Knorr synthesis), get acquainted with a variety of specific methods for obtaining five-membered heterocycles.

Taking into account the major practical importance of five-membered heterocycles, students need not only to know the main methods for their preparation, but also to clearly understand their reactivity and areas applications.

Results and Methods

Carbazole derivatives are well known for their pharmacological activity. It is known from the literature that derivatives of the carbazole fragment have a wide range of pharmacological activity, such as antibacterial [1–3], antifungal [4,5], antitumor, antitumor [6–10], anticonvulsant [11], antioxidant [12], antidiabetic [13] antipsychotic [14] and larvicidal activity [15]. Various heteroannelated carbazole derivatives have attracted attention due to their natural origin and the wide spectrum of biological activity associated with these compounds. The carbazole fragment is a frequent component of many drugs, such as olivacin, ondansetron, rimcasol, stauroapirone, carbazolol, carvedilol, carprofen, kakotelin, rebaccamycin, ellipticin and various naturally occurring carbazole alkaloids. new antipsychotic, neuroleptic and anticonvulsant drugs.

In addition, various congeners of oxadiazole, thiadiazole, azetidinone, and thiazolidinone have been reported to exhibit potent antimicrobial, anticancer, antipsychotic, antidepressant, and anticonvulsant activities. In view of the broad biological activity of carbazole derivatives, it was planned in this study to synthesize new carbazole derivatives and by incorporating new pharmacophores, such as oxadiazole at position 9 of the carbazole nucleus, with the hope of obtaining more effective pharmacologically active drugs as anticancer and antimicrobial agents. In the same direction, a one-pot method was developed for the synthesis of the series 5-[(9H-carbazol-9-yl)methyl]-N-[(substituted-phenyl)(piperazin-1-yl)methyl]- Derivatives 1,3,4- oxadiazole-2-amine (4a–o) as Mannich bases.



Synthesis of carbazole derivatives.

All synthesized compounds 4a–o were evaluated for their anticancer activity against the human breast cancer cell line MCF7 by SRB assay. An in vitro anti-cancer study was conducted at the Tata Memorial Centre, Advanced Center for Research and Education in Cancer Treatment (ACTREC), Navi Mumbai, India. The data obtained are given in table. III. Compounds 4a, 4d, 4k, 4m, and 4n were found to be the most active against human breast cancer cell lines among all synthesized compounds. For a wide variety of polycyclic compounds, core moieties attached to the ring system have been found not only to improve solubility under physiological conditions, but also to increase antitumor activity. In the present study, it was found

Experimental part

Chloracylation reaction of carbazole.

0.005 mol (0.835 g) of carbazole is dissolved in 10 ml of acetone, 0.005 mol (0.397 ml) ρ= 1.142 g/ml of chloroacetyl chloride is added to the resulting solution at 0 degrees Celsius. The reaction mixture is incubated for 10 hours, stirring Magnet in a stirrer.Место для уравнения.

Conclusion

The chlorination reaction of carbazole proceeded in different ways. The studied result of chlorination depends on the nature of the solvent, temperature and vacuum duration.

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