

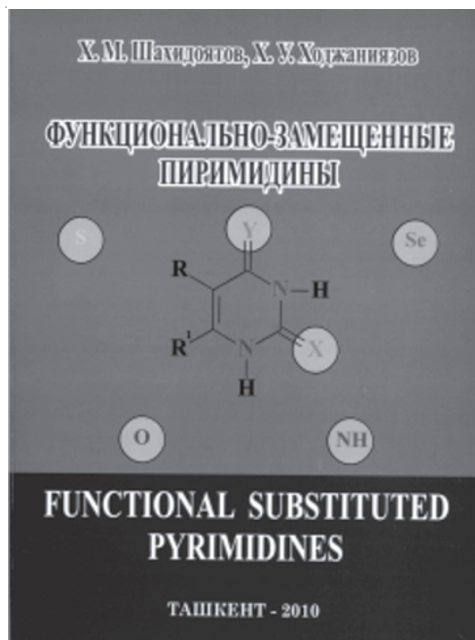
ATTENTION AUTHORS

A NEW BOOK

by

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FUNCTIONALLY-SUBSTITUTED PYRIMIDINES



The pyrimidine ring is central to many natural compounds including nucleic acids, vitamin B₁, many synthetic drugs, etc.

Pyrimidines exist in two or more tautomeric isomers with heteroatoms or methylenes in the 2- or 4-positions or both positions simultaneously. This is exceedingly important for understanding the nature of the hydrogen-bonds in nucleic acids.

Pyrimidin-4-ones (thiones, iminopyrimidines) with a heteroatom (O, S, Se, NH, NR, etc.) or methylene in the 2-position can also exist as tautomers involving the carbonyl or other groups on C-4 or the heteroatom on C-2. For these, 4-hydroxy- (or 4-mercapto-, amino-), 2-hydroxy (mercapto-, -amino), and 2-oxo (thioxo-, selenoxo-, amino-) species are possible. Therefore, these pyrimidine derivatives and their analogs condensed with furan, pyrrole, thiophene, imidazole, benzene, pyridine, and other rings are of great interest from the viewpoint of tautomeric conversions and are the subject of this book. The book focuses on identification of the tautomeric species and the distribution of delocalized negative charge around the framework, the reactions of these anions with electrophilic reagents, and the explanation of reaction principles involving one or several reaction centers.

Synthetic methods for 2-hetero-substituted 4-oxo(thioxo-, imino)pyrimidines and their condensed analogs and common and differentiating aspects of their preparation are reviewed.

Reactions of these compounds and their anions with electrophilic reagents (nitration, bromination, alkylation, acylation, etc.) and features of the reaction pathways are broadly discussed.

The biological section includes data on the pharmacological and phytotoxicological activities.

Spectral (UV, IR, PMR, mass) properties and the relationship between compound structure and spectral data are discussed.

A separate section is devoted to the synthesis and chemical transformation of tricyclic quinazoline alkaloids, several of which (deoxypeganine) are used in medical practice.

The book is aimed at a broad cadre of scientists working on the chemistry of natural compounds and organic chemistry, pharmacists, teachers, graduate students, and undergraduates.

Keywords: pyrimidines, quinazoline alkaloids, synthesis, chemical transformations.