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Abstract:

The presented thesis is focused on the synthesis of various C-5 modified uracil analogues, the study of their reactivity and biological activity, especially cytotoxic activity. In the first part, the brief survey of described results for selected 5-alkoxymethyluracil analogues is performed. The second part of the presented thesis deals with the synthesis of novel uracil analogues modified at the C-5 position, the development and optimizing of procedure leading to the desired compounds, the study of biological activity and the evaluation of structure-activity relationship (SAR). This part presents the synthesis of a series of 5-[alkoxy(4-nitrophenyl)methyl]uracil and 5-alkoxymethyluracil analogues and extended SAR studies depending on a substitution of methylene bridge directly attached at the C-5 position as well as alkoxy chain length. The last part of the presented work is focused on synthesis of pyrimidine oligodeoxynucleotides containing either substituted phenyltriazole or substituted phenylethynyl moiety at position C-5. The synthesis of such a modified oligodeoxynucleotides follows antisense approach that involves targeting of RNA within cells as a means of control of gene expression.

Keywords: Uracil, biological activity, cytotoxic activity.
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