Styliani Manta

BIOACTIVE UNSATURATED KETONUCLEOSIDES. SYNTHESIS AND BIOLOGICAL EVALUATION OF FLUORO-KETONUCLEOSIDES OF ADENINE AND CYTOSINE

ABSTRACT

The aim of the present thesis was the synthesis and the biological evaluation of new series of fluorinated nucleoside analogues with six-membered carbohydrate moieties of N^4-benzoylcytosine and N^6-benzoyladenine. Based on the interesting biological properties of unsaturated ketonucleosides and deoxy-pyranonucleosides and considering that the introduction of fluorine into the sugar moiety of a nucleoside increases its biological activity, in the present work, the synthesis of new series of fluorinated keto unsaturated and deoxyketo-pyranonucleoside analogues of N^4-benzoylcytosine and N^6-benzoyladenine respectively, was described.

Initially, the synthesis of a new class of nucleoside analogues possessing a fluoro group in the 3′-position, a keto group in the 4′- or 2′-position and deoxy in the 2′- or 4′-position of the sugar moiety respectively, was studied. Then, the synthesis of a new class of fluorinated unsaturated ketonucleosides possessing a fluoro group in the 3′-position, a keto group in the 2′- or 4′-position and a double bond in the 3′,4′- or 2′,3′-positions of the sugar moiety respectively, was described. Finally, a new class of fluorinated deoxy keto unsaturated nucleosides, possessing a fluoro group in the 3′-position, deoxy in the 6′-position, a keto group in the 4′- or 2′-position and a double bond in the 2′,3′- or 3′,4′-positions of the sugar moiety respectively, was synthesized. The above nucleoside analogues contained N^4-benzoylcytosine or N^6-benzoyladenine respectively, as heterocyclic bases.

In the present thesis, the biological studies of the newly synthesized compounds were also accomplished, concerning their antiviral, anticancer and antioxidant activity.