ABSTRACT

The important role of nucleosides in their chemical behavior and biological activity has led the researchers to synthesize modified nucleosides in both moieties, the base and carbohydrate ring, with excellent antiviral, anticancer and antimicrobial activity. This dissertation is focused on the synthesis of novel nucleoside analogs with modifications in both moieties, the sugar and the uracil ring, and on acyclic nucleosides with a modification on the uracil base, as well.

On the basis of the great biological importance of nucleosides for the health and well being of humans as well as previously reported data that: a) trifluoromethyl and methyl groups are considerable pharmacophore groups for biological activity, b) acyclic nucleosides considered to have exceptional antiviral and cytostatic activities and c) alkynyl-modified nucleosides and especially pyrimidine derivatives substituted at *C*5, have been shown to possess interesting biological properties. It was of interest to design and synthesize a new series of modified C5 uracil nucleosides bearing modified pyrano- and furano carbohydrate rings as well as acyclic moieties.

The target nucleosides were evaluated for their antiviral and cytostatic properties using several virus strains and cancer cell lines.