

Cyclohexene Oligonucleotides: Structure of the L-CeNA Sequence GTGTACAC

Koen Robeyns^a, Piet Herdewijn^b and Luc Van Meervelt^a, *^aDepartment of Chemistry, Katholieke Universiteit Leuven, Heverlee, Belgium.*

^bLaboratory of Medicinal Chemistry, Rega Institute, Katholieke Universiteit Leuven, Leuven, Belgium. E-mail: koen.robeyns@chem.kuleuven.ac.be

Cyclohexene nucleic acids (CeNA) contain a cyclohexene ring instead of the normal β -D-2'-deoxyribose. The cyclohexene oligonucleotide GTGTACAC was synthesized using phosphoramidite chemistry and standard protecting groups [1].

CeNA is stable against enzymatic degradation and induces RNaseH activity. CeNA also forms more stable duplexes with RNA than its natural analogues [2] [3].

Crystals of GTGTACAC were obtained at 289K by the hanging-drop vapour-diffusion technique. The crystals diffract to 1.7 Å resolution and belong to the trigonal space group R3 with unit-cell parameters $a = 41.434$ and $c = 66.735$ Å.

The structure of a fully modified GTGTACAC sequence with left handed CeNA building blocks is presented. Particular interests concern the puckering of the sugar moiety, helical parameters and the hydration of the double helix.

[1] Gu P., Schepers G., Rozenski J., Van Aerschot A., Herdewijn P., *Oligonucleotides*, 2003, **13**, 479-489. [2] Wang J., Verbeure B., Luyten I., Lescrinier E., Froeyen M., Hendrix C., Rosemeyer H., Seela F., Van Aerschot A., Herdewijn P., *J. Am. Chem. Soc.*, 2000, **122**, 8595-8602. [3] Verbeure B., Lescrinier E., Wang J., Herdewijn P., *Nucleic Acids Research*, 2001, **29**, 4941-4947.

Keywords: nucleic acids, oligonucleotides, antisense