Structural Study of the Nucleolin~G-quartet Complex

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Nucleolin is a very abundant protein of molecular mass 70 kDa that localizes to the nucleolus. It is often used as a cell proliferation marker. Nucleolin interacts with oligonucleotides such as ribosomal RNA [1]. A 40 kDa-fragment of this protein named P40 has been purified to homogeneity. Nucleolin full-length as well as P40 interact with short DNA segments structured in G-quartet [2]. G-quartets are known as potential therapeutic agent against carcinogenesis.

Various G-rich sequences have been structured and tested in interaction with P40 by "Band-shift". Crystallisation trials have been performed for the most stable complexes. Thus, a crystallization condition has been obtained for an expected P40-4(TG4T) complex. Crystals of dimensions 200 x 100 x 20 μm^3 diffract up to 2 Å in house. They belong to space group P1 with unit-cell parameters a=29Å b=32Å c=35Å α=66° β=72° γ=83°. Such small cell volume corresponds to G-quartet only. X-ray data have been collected and the structure has been solved by molecular replacement, using as model the structure of the same G-quartet obtained in another crystal form [3]. Crystallisation trials on other complexes are under way.

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Keywords: human proteins, DNA and protein crystallography, anticancer drug structural study