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NMR assignments of the N-terminal domain of Ogataea polymorpha telomerase reverse transcriptase

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Abstract

© 2015, Springer Science+Business Media Dordrecht.Telomerase is a ribonucleoprotein enzyme that adds telomeric DNA fragments to the ends of chromosomes. This enzyme is the focus of substantial attention, both because its structure and mechanism of action are still poorly studied, and because of its pivotal roles in aging and cellular proliferation. The use of telomerase as a potential target for the design of new anticancer drugs is also of great interest. The catalytic protein subunit of telomerase (TERT) contains an N-terminal domain (TEN) that is essential for activity and processivity. Elucidation of the structure and dynamics of TEN in solution is important for understanding the molecular mechanism of telomerase activity and for the design of new telomerase inhibitors. To approach this problem, in this study we report the 1H, 13C, and 15N chemical shift assignments of TEN from Ogataea polymorpha. Analysis of the assigned chemical shifts allowed us to identify secondary structures and protein regions potentially involved in interaction with other participants of the telomerase catalytic cycle.

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Keywords

Protein NMR, Resonance assignment, Secondary structure, Telomerase, TERT