

Tumor specific oligomeric forms of protein b23/nucleophosmin

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In tumor cells nucleophosmin is overexpressed. According to the latest literature data the gene of nucleophosmin most frequently underwent modifications (mutations, deletions, translocations) during malignant blood disorders. Structural state of nucleophosmin in solid tumor is less studied. We have developed a strategy for isolation and structural analysis of nucleophosmin from HeLa cells. The protein forms functioning in human tumor cells have been characterized. The site of protein truncation has been established and the ability of truncated nucleophosmin to form SDS-resistant oligomers has been shown for the first time. We have analyzed the monomer-oligomer state of B23 in human tumor cell of various origin such as HeLa, Hep G2, MCF-7, NGP, K-562, Jurkat, Ramos, U-87, JMR-32; in rat tumor C6 cells, normal rat tissues (brain, liver, kidney, heart, lung). We have created special antipeptide antibodies which specifically react either with oligomeric or monomeric forms in contrast to monoclonal antibodies (FC82291, Sigma) that recognize nucleophosmin monomers and oligomers together. The SDS-stable oligomers were detected in all tumor cells, but were not detected in normal tissue cell lysates. For the first time we described essential differences in the level and localization of B23 oligomers and monomers in glioma (C6, U-87) and neuroblastoma (JMR-32) cells. This work was supported by the RFBR (project No. 09-04-00713-a) and the Program "Fundamental Sciences for Medicine" (project 2009-2011).

Biography

Natalya Vladimirova has been a Senior Researcher at Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences (Russia) since 1987. She graduated from Lomonosov Moscow State University in 1972 with a degree in chemistry. Since that time she has been working in Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry and studying the structure and functions of different proteins. She got a PhD degree in 1979. Vladimirova has more than 70 scientific publications, carries out scientific seminars for students. She is a scientific supervisor of post-graduate students. During last seven years she has been studying the role of nucleolar proteins in carcinogenesis and apoptosis, paying special attention to protein B23/nucleophosmin.