CURRENT CONCEPT OF THE STRUCTURAL AND FUNCTIONAL PROPERTIES OF ALFA-FETOPROTEIN AND THE POSSIBILITIES OF ITS CLINICAL APPLICATION

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This paper was aimed to review the literature data from native and foreign sources accumulated for 40-years period of research of the features of the molecular structure, functions, production and application of human alpha-fetoprotein (AFP), which is known as one of the most studied and increasingly demanded proteins. Results of fundamental studies performed with the use of
modern methods, including various types of electrophoresis, chromatography, electron microscopy and immunoassay, in order to characterize the principal physicochemical capacities and localization of free and bound forms of AFP, as well as polypeptide structure, heterogeneity and topography of AFP receptors are highlighted here. The data on the mechanisms of AFP synthesis, its conformational features, binding sites and intracellular metabolism are also presented. The concepts of physiological functions and mechanisms of AFP transport in an organism are presented. Data on AFP isolation from the natural primary products and its production by means of recombinant and synthetic methods are shown. This review also summarizes information on the current possibilities of clinical application of AFP and the prospects for its usage in anticancer therapy for targeted delivery of chemotherapy drugs, with emphasis on the description of the recent progress in this field.

**Key words:** alpha-fetoprotein, sources of alpha-fetoprotein production, application of alpha-fetoprotein, targeted delivery of chemotherapy drugs.

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