

Conformational and Functional Disturbances of Serum Albumin Are Characteristic for First Episode Drug-naive Schizophrenic Patients.

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Objective. Conformational changes of human serum albumin (HSA) can disturb its main functions.

Aim. To reveal serum albumin disturbances using the high-tech approaches in first episode schizophrenia.

Methods. First-episode drug-naïve schizophrenic (FES) patients were investigated. There were employed laser time resolved subnanosecond fluorescence spectroscopy (LTRSFS) using specific albumin fluorescent probe and high resolution nuclear magnetic resonance (NMR) ¹H spectroscopy.

Results. There were revealed 3 binding sites in albumin molecule with fluorescent decay time of 1, 3 and 9 nanoseconds (A1, A3 and A9 sites, respectively) in healthy volunteers using LTRSFS approach. There was found significant decrease of fluorescent decay time of probe bound to albumin A3 site of FES patients as compared with controls. It points out on the conformational changes in HSA molecule in FES patients. NMR ¹H spectra of blood serum and its albumin fraction of healthy donors and FES patients were studied. There were shown clear differences in NMR ¹H spectra between these two groups that points out to the conformational changes of albumin molecule in FES patients and disturbances in albumin transport functions. The reaction ability of thiol groups of albumin molecules in FES patients was significantly lower in comparison with healthy persons. It also points out on disturbances of antioxidant albumin properties in FES patients.

Conclusion. High-tech approaches can be useful for the development of new biomarkers for diagnostic and predicting methods and methods for the evaluation of the efficacy of different types of therapy of mental disorders.