# The PPII-to-α-helix transition of poly-L-lysine in methanol/water solvent mixtures accompanied by fibrillar self-aggregation : an influence of fluphenazine molecules.

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Streszczenie

Fourier-transform infrared, vibrational circular dichroism spectroscopy and transmission electron microscopy are used to follow the structural changes of pure and fluphenazine (FPh)-mixed poly-l-lysine (PLL) triggered by variations of the methanol to water ratio in solvent mixtures. FPh molecules are used as an effective psychotic drug but with a strong Parkinson's-related side effect. To answer the question whether FPh molecules can modify the fibril development, the PLL polypeptide was used as a model of α-helix- and PPII-rich fibrils. It was stated that the presence of FPh molecules did not inhibit the creation of both types of PLL fibrils with clustering features. The methanol-poor aqueous solutions promote the formation of extended polyproline II (PPII) helices; however, the methanol-rich aqueous solutions induce the development of α-helices of both pure and FPh-mixed PLL. Unpredicted and interesting features of PLL fibrillogenesis are evidenced by the formation of uncommon fibrillar aggregates, which are developed in methanol/water solvents from PLL molecules rich in either α-helix or PPII structures. Possibility of PLL molecules to form β-sheet-, α-helix- and PPII-rich fibrils demonstrating that fibrillogenesis is a common phenomenon, and fibrillar aggregates can be based on all of the basic protein secondary structures.

Słowa kluczowe

infrared spectroscopy, PPII-rich fibrils of PLL, Pro-fibrillar activity of FPh, transmission electron microscopy, vibrational circular dichroism, α-Helix-rich fibrils of PLL

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