

Effect of phenothiazine compounds on the secondary structure and fibrillogenesis of poly-L-lysine.

Autorzy

Katarzyna Cieřlik-Boczula

Rok wydania

2019

Czasopismo

Spectrochimica Acta Part A-
Molecular and Biomolecular
Spectroscopy

Numer woluminu

216

Strony

15-24

DOI

10.1016/j.saa.2019.03.011

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Phenothiazine molecules are effective and commonly used antipsychotic drugs, especially in the treatment of schizophrenia. However, they produce strong extrapyramidal side-effects manifested by drug-induced parkinsonism. Because Parkinson's disease as a neurodegenerative illness is associated with the formation of amyloid fibrils in neuronal cells, it is postulated that the development of phenothiazine-induced parkinsonism may be related to the phenothiazine-induced formation of fibrillar aggregates. The effect of phenothiazine compounds (fluphenazine (FPh), chlorpromazine (ChP) and propionylpromazine (PP)) on the fibrillogenesis of poly-L-lysine (PLL) was studied using Fourier-transform infrared (FTIR) spectroscopy supported by principal component analysis (PCA), vibrational circular dichroism (VCD), transmission electron microscopy (TEM) and Congo red binding assay. The fibrillogenesis of PLL is accompanied by fibril formation with charged or uncharged polypeptides with PPII (polyproline-like extended helix), α -helix or β -sheet conformations. All of the phenothiazine molecules investigated effectively reduced the temperature required to induce the formation of β -sheet-rich fibrils from α -helix-rich fibrils of PLL.

Słowa kluczowe

Fluphenazine, Chlorpromazine, Propionylpromazine, Activators of fibril formation, Fourier-transform infrared (FTIR) spectroscopy, Vibrational circular dichroism (VCD)

Adres publiczny

<https://doi.org/10.1016/j.saa.2019.03.011>

Strona internetowa wydawcy

<http://www.elsevier.com>

