

The Heavy Atom Effect on Spectro-Optical Properties of Pi-electron Containing Molecular Complex Based on Tryptanthrin

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Tryptanthrin is a naturally occurring indoloquinazoline alkaloid (Indolo[2,1-b]quinazoline-6,12-dione; C₁₅H₈N₂O₂), the well-known pi-electron-containing compound. It was found in the cells of many plants, microorganisms and in some mammals [1]. Tryptanthrin possesses broad "spectrum" of biological and pharmacological activities due to its feature of easy binding to telomeric G4 DNA and stabilizing it [2,3]. Specifically, platinum complex based on 8-iodo-tryptanthrine possesses the higher anticancer activity than other tryptanthrin derivatives. Our investigations are focused on comparison of spectro-optical properties of the molecular complexes based on tryptanthrin (Try-Pt) and 8-iodo-tryptanthrin (ITry-Pt).

Optical absorption, fluorescence and phosphorescence of Try-Pt and ITry-Pt complexes were investigated. The first excited energy levels positions of these complexes were obtained. The iodine atom effect on spectro-optical properties of tryptanthrin pi-electron system were manifested: the short-wavelength shift of optical absorption spectrum of ITry-Pt in comparison with the corresponding spectrum of Try-Pt, the significant decrease of fluorescence intensity of ITry-Pt in contrast to the corresponding fluorescence intensity of Try-Pt, the short-wavelength shift of fluorescence and phosphorescence spectra of ITry-Pt relative to the corresponding spectra of Try-Pt.

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Topics

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