عنوان مقاله:

Protein Interaction and Cytotoxicity of Novel Pt(II) and Pd(II) Complexes

محل انتشار:

پانزدهمین همایش بیوشیمی فیزیک ایران (سال: 1397)

تعداد صفحات اصل مقاله: 1

نویسندگان:

Behafarid Ghalandari - *ıDepartment of Medical Nanotechnology, Applied Biophotonics Research Center, Science and Research Branch, Islamic Azad University, Tehran, Iran*

Atefeh Poursoleiman - *Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran*

Mina Fekri - *Department of Cell and Molecular Biology, Faculty of Biological Sciences, Khrazmi University, Tehran, Iran*

Adeleh Divsalar - *Department of Cell and Molecular Biology, Faculty of Biological Sciences, Khrazmi University, Tehran, Iran*

خلاصه مقاله:

Metal-based drugs are effective pharmaceutical components for presence in the cancer treatment. Despite success of metal-based drugs, in particular various generations of platinum-based drugs in chemotherapy, there still remaining undesirable and toxic properties. So, there is a crucial quest to introduce new generation of metal-based drugs. Hence, in the present study the protein interaction and cytotoxicity of novel Pt(II) and Pd(II) complexes were investigated to evaluate biological aspects. The biological assessments were investigated by protein interaction study with carrier protein human serum albumin (HSA) and in vitro cytotoxicity studies with human colorectal carcinoma model (HCT116 cell line). Multi-spectroscopic methods as well as molecular docking were carried out to probe novel complexes binding to HSA. In addition, the cytotoxicity study was done using MTT assay. The results of fluorescence study in coherent well with molecular docking data illustrated that newly-designed complexes bind to HSA only in one position. Also, circular dichroism results and thermal stability findings revealed that the structure of HSA has no changes affected by binding to the newly-designed complexes. MTT assay showed that the growth of HCT116 cell line was inhibited by a dose-dependent response. The results demonstrated that the novel complexes with several long hydrophobic chains has negligible structural side effects along with higher cell growth inhibition effects. Therefore, the lipophilicity of metal-based drugs should be increase to have insignificant structural side effects and higher cytotoxicity. Consequently, the novel Pt(II) and Pd(II) complexes with several long hydrophobic chains are promising candidates for presence in cancer treatment.

کلمات کلیدی:

HSA, Pt(II) complex, Pd(II) complex, interaction, cytotoxicity