Cu^{I} and Cu^{II} complexes with phosphine derivatives of fluoroquinolone antibiotics : a comparative study on the cytotoxic mode of action.

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Rok wydania

2018

Czasopismo

Journal of Inorganic Biochemistry

Numer woluminu

181

Strony

1-10

DOI

10.1016/j.jinorgbio.2018.01.008

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

In this paper, we present a comparative study on the cytotoxic mode of action of copper(I) and copper(II) complexes with phosphine derivatives of fluoroquinolone antibiotics (ciprofloxacin HCp and norfloxacin HNr). The in vitro cytotoxic activity of four new compounds was tested against two selected cancer cell lines. All complexes exhibited much better cytotoxicity against both cell lines than unmodified fluoroquinolone antibiotics, their phosphines (PCp, PNr), chalcogenide derivatives (oxides: OPCp, OPNr; sulfides: SPCp, SPNr and selenides: SePCp, SePNr) and previously described by us complexes with phosphines derived from different fluoroquinolones: lomefloxacin (HLm) and sparfloxacin (HSf) as well as cisplatin. Apoptosis, observed at a great predominance, was induced by all studied complexes. Importantly, it was concluded that coordination compounds with Cu(I) ion ([Cu^{I}-PNr] and [Cu^{I}-PCp]) were much more active than those with Cu(II) ion ([OPNr-Cu^{II}], [OPCp-Cu^{II}]), even though the highest efficacy to produce reactive oxygen species, participating in overall cytotoxicity, was proved for copper(II) complexes among all studied compounds. Herein, we discuss not only results obtained for copper(I)/(II) complexes with phosphines derived from HNr and HCp but we also compare them to previously described data for complexes with HLm and HSf derivatives. This is the first insight into a structure-activity relationship of copper complexes with phosphine derivatives of fluoroquinolone antibiotics.

Słowa kluczowe

Apoptosis, Copper complexes, Fluoroquinolones, ROS production

Adres publiczny

http://dx.doi.org/10.1016/j.jinorgbio.2018.01.008