

L-argininato copper(II) complexes in solution exert significant selective anticancer and antimicrobial activities.

Autorzy

Agnieszka Wojciechowska
Agnieszka Szuster-Ciesielska
Monika Sztandera
Romualda Bregier-Jarzębowska
Anna Jarząb
Tomasz Rojek
Urszula K. Komarnicka
Agnieszka Bojarska-Junak
Julia Jezierska

Rok wydania

2020

Czasopismo

Applied Organometallic
Chemistry

Numer woluminu

34

Strony

e5698/1-e5698/16

DOI

10.1002/aoc.5698

Kolekcja

Naukowa

Streszczenie

A search for new drugs that overcome the multidrug resistance of microorganisms or are effective against cancer cells prompted us to investigate the binary and ternary Cu(II) complexes containing L-arginine, $[\text{CuCl}(\text{L-Arg})(\text{phen})]\text{Cl}\cdot 2\text{H}_2\text{O}$ (phen = 1,10-phenanthroline) (**1**) and $[\text{Cu}(\text{L-Arg})_2(\text{H}_2\text{O})]\text{C}_2\text{O}_4\cdot 6\text{H}_2\text{O}$ (**2**), for which crystal and molecular structures were characterized previously. In order to discuss the biological function, the complexes have been screened for their antitumor activity against A549 (human lung cancer cells), HepG2 (human liver hepatocellular carcinoma cells) and antimicrobial activity. To identify the complexes forms existing in the solutions of **1** and **2** crystals, the results obtained from EPR, NIR-Vis-UV and MS (mass spectrometry) measurements were correlated with those from analysis of potentiometric titration of Cu(II)—L-Arg and Cu(II)—L-Arg—phen systems. This comprehensive study indicated that the $[\text{Cu}(\text{L-Arg})(\text{phen})]^{2+}$ and $[\text{Cu}(\text{L-Arg})_2]^{2+}$ species are dominant in the solution. Complexes **1** and **2** were found to present specific ligand-dependent cytotoxic and antiproliferative potential against cancer cells. They also show antibacterial activity against Gram-positive and Gram-negative bacteria as well as display antifungal properties.

Słowa kluczowe

Antimicrobial activity, cytotoxic and antiproliferative potential, L-arginine, NIR-Vis-UV and EPR spectroscopies, potentiometry

Adres publiczny

<http://dx.doi.org/10.1002/aoc.5698>

Strona internetowa wydawcy

onlinelibrary.wiley.com

Język

Angielski

Typ publikacji

Artykuł

Plik został wygenerowany dnia 2026-08-24 09:42:15

Adres w repozytorium <https://old.chem.uni.wroc.pl/pl/repozytorium/vSYEb-N>.