A novel copper(I) complex, [CuI(2,2'-biquinoline)P($CH_2N(CH_2CH_2)_2O)_3$]-synthesis, characterisation and comparative studies on biological activity.

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Rok wydania

2013

Czasopismo

Polyhedron

Numer woluminu

50

Strony

481-489

DOI

10.1016/j.poly.2012.11.033

Kolekcja

Naukowa

Język

Angielski

Streszczenie

A novel water and air stable copper(I) complex, [CuI(2,2′-biquinoline)P($CH_2N(CH_2CH_2)_2O)_3$] (**1bq**), was synthesized and characterized by means of ^{1}H, $^{13}C\{^{1}H\}$ and $^{31}P\{^{1}H\}$ NMR, ESI-MS and elemental analysis. The X-ray structure of **1bq** shows that the coordination geometry about the Cu(I) center is pseudo-tetrahedral. **1bq** was assayed for antibacterial (*Escherichia coli* – a Gram-negative rod and *Staphylococcus aureus* – a Gram-positive coccus) and antifungal (*Candida albicans*) activities. The activity of **1bq** was lower than that of [CuI(2,9-dimethyl-1,10-phenanthroline)P($CH_2N(CH_2CH_2)_2O)_3$] (**1N**) . **1bq** also showed significantly lower cytotoxicity than **1N** on MSC (mesenchymal stem cells) culture and the RK-13 cell line. Both **1bq** and **1N** complexes bind to HSA and BSA albumins in site I located in subdomain IIA, however **1bq** interacts less strongly with these albumins than **1N**. Surprisingly, investigation of the interactions of the studied complexes with pUC18 plasmid showed a comparable effectiveness of **1N** and **1bq** for DNA cleavage.

Słowa kluczowe

Copper(I) complex, Tris(aminomethyl)phosphine, Antimicrobial activity, Cytotoxicity, Albumins, pUC18 plasmid

Adres publiczny

http://dx.doi.org/10.1016/j.poly.2012.11.033

Strona internetowa wydawcy

http://www.elsevier.com

Typ publikacji

Artykuł