

Tris(aminomethyl)phosphines and Their Copper(I) (Pseudo)halide Complexes with Aromatic Diimines—A Critical Retrospection

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Streszczenie

Metal complexes feature a wide range of available geometries, diversified lability, controllable hydrolytic stability, and easily available rich redox activity. These characteristics, combined with the specific properties of coordinated organic molecules, result in many different mechanisms of biological action, making each of the myriads of the classes of metal coordination compounds unique. This focused review presents combined and systematized results of the studies of a group of copper(I) (pseudo)halide complexes with aromatic diimines and tris(aminomethyl)phosphines of a general formula $[CuX(NN)PR_3]$, where $X = I^-$ or NCS^- , $NN = 2,20$ -bipyridyl, 1,10-phenanthroline, 2,9-dimethyl-1,10-phenanthroline or 2,20-biquinoline, and $PR_3 =$ air-stable tris(aminomethyl)phosphines. The structural and electronic properties of the phosphine ligands and luminescent complexes are discussed. The complexes with 2,9-dimethyl-1,10-phenanthroline, apart from being air- and water-stable, exhibit a very high in vitro antimicrobial activity against the *Staphylococcus aureus* and *Candida albicans*. Moreover, some of these complexes also show a strong in vitro antitumor activity against human ovarian carcinoma cell lines: MDAH 2774 and SCOV 3, CT26 (mouse colon carcinoma), and A549 (human lung adenocarcinoma) cell lines. The tested complexes are moderately able to induce DNA lesions through free radical processes, however the trends do not reflect observed differences in biological activity.

Słowa kluczowe

copper(I), tris(aminomethyl)phosphines, metal complexes, antibacterial activity, antifungal activity, anticancer activity, plasmid DNA, serum albumin

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