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BOOK OF ABSTRACTS

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Novel Heteroleptic Copper(II) Complexes with 5-chloro-2-hydroxybenzophenone and N-N donors: Synthesis, Physicochemical Characterization, DNA Interaction and Antitumor Activity

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Copper(II)-based compounds are known to exhibit a wide range of biological activities, including anticancer, antimicrobial, antifungal and antiviral [1]. The 2-hydroxybenzophenone derivatives that presents numerous bioactivities and was shown to have cytotoxicity effects against several human tumor cells [2]. Copper(II) with 2-hydroxybenzophenone derivatives variety of ligands also exhibit antineoplastic activity [3]. With 2-hydroxybenzophenone derivatives under clinical trials, polypyridines, most common include 2,2'-bipyridine, 1,10-phenanthroline and others, as well as predominantly methylated derivatives. In this work, we synthetize a copper(II) complexes with a 5-chloro-2-hydroxybenzophenone = 5-Cl2HBz and N-heterocycles: [Cu(5-Cl2HBz)(phen)(NO_3)] (**1**), [Cu(5-Cl2HBz)(bathophen)]·(NO_3)·1.5 H_2O· CH_3OH (**2**), [Cu(5-Cl2HBz)(bipy)(H_2O)(NO_3)] (**3**), [Cu(5-Cl2HBz)(5,5'-bipy)(NO_3)] (**4**) and [Cu(5-Cl2HBz)(tert-bipy)(NO_3)]·2 H_2O where phen = 1,10-phenanthroline, bathophen = 4,7-diphenyl-1,10-phenanthroline, , bipy = 2,2'-bipyridine, 5,5'-bipy = 5,5'-bipyridine, tert-bipy = 4,4'-bis(tert-butyl)-2,2'-bipyridine. Crystal structure of (**1**-**5**) revealed that the copper(II) center is coordinated to two O atoms from 5-chloro-2-hydroxibenzophenone, two N atoms from N-heterocycles ligands, and one nitrate anion, in a distorted square pyramidal geometry. Complex (**2**) interacted with CT-DNA in vitro by an intercalative mode and exhibited expressive cytotoxicity against A2780 (ovarian cancer cell), A549 (lung cancer cell) and MCF-7 (breast cancer cell) being fivefold more active than bathophen on A2780 cells and threefold more active than bathophen on MCF-7 cells. The foregoing results suggest that further studies on the cytotoxic effects and cellular targets of complex (**2**) are needed.

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