XXI Brazilian Meeting on Inorganic Chemistry
X Brazilian Meeting on Rare Earths
III Workshop on Theoretical Bioinorganic Chemistry
Belo Horizonte, September 12 - 15th 2024

Indium(III) complexes with 8-hydroxyquinoline derivatives and 1,10-phenanthroline: cytotoxic effects on HCT-116 colorectal cancer cells

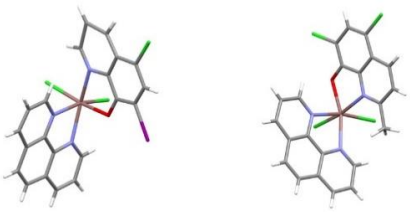
Bruna V. Paes[1], Enzo F. C. S. Gonçalves[1], Luan F. Diniz[1], Davi N. Costa[2], Renata Diniz[1], Claudia Pessoa[2], and Heloisa Beraldo[1]

[1]Department of Chemistry, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil
[2]Department of Physiology and Pharmacy, Universidade Federal do Ceará, Fortaleza, Brazil
E-mail: brunavidal.p@gmail.com

Thematic Area: Biological Inorganic Chemistry

Keywords: Indium(III) complexes, cytotoxic effects, HCT-116 cells

Although radioactive ^{111}In(III) compounds have been extensively investigated for the labeling of cells in the detection and diagnosis of infections and inflammation, the pharmacological applications of non-radioactive indium(III) complexes remain so far almost unexplored [1]. Indium(III) complexes have shown antimicrobial [2] and antitumor [3] activities. Metal complexes with 8-hydroxyquinoline (8HQ) have been reported to possess antibacterial [4] and antitumoral [5] effects. Some ligands such as 1,10- phenanthroline (phen) might interact with DNA by intercalation [6]. The attachment of these organic intercalators to metal coordination complexes, yielding metallo-intercalators, can lead to novel DNA interactions that influence anticancer activity [7]. Therefore, metal complexes with 1,10-phenanthroline as ancillary ligand might be a strategy for designing new anticancer metal compounds with intercalating properties. The present work involves indium(III) complexes containing 5-chloro-7-iodo-8-quinolinol (clioquinol) or 5,7-dichloro-8-hydroxy-2-methylquinoline and 1,10-phenanthroline, complexes (**1**) and (**2**) (Figure 1). The complexes were already synthesized and fully characterized and are presently being assayed for their cytotoxic activities against a panel of tumor and non-malignant cells. Preliminary results of % cell growing inhibition indicated that the complexes show cytotoxic activity against HCT-116 colorectal tumor cells. The tests are presently ongoing to determine IC_{50} values and the selectivity indexes.



(1) **(2)**

Figure 1. Indium(III) complexes (**1**) and (**2**).

Acknowledgments: CNPq, CAPES, and FAPEMIG.

References

[1] H. Beraldo. Coord. Chem. Rev. 419, 213375 (2020).
[2] A. A. Oliveira *et al*., Dalton Trans., 46, 918 (2017).
[3] A. A. Oliveira et al., Polyhedron. 135, 72 (2017).
[4] R. Cherdtrakulkiat, *et al*., Biochem. Biophys. Rep. 6, 135 (2016).
[5] K. S. O. Ferraz, *et al*., Polyhedron. 63, 28 (2013).
[6] C. V. Barra, *et al*., Inorg. Chim. Acta. 446, 54 (2016).
[7] H-K. Liu, P. J. Sadler. Acc Chem Res. 44, 349 (2011).