

Accepted Manuscript

Synthesis and characterization of thorium (IV) complexes of 2-aminothiazole and their evaluation as effective antimicrobial and antioxidant agents

Neelima Mishra, Kavita Poonia, Nutan Sharma, Sarvesh K Soni, Dinesh Kumar

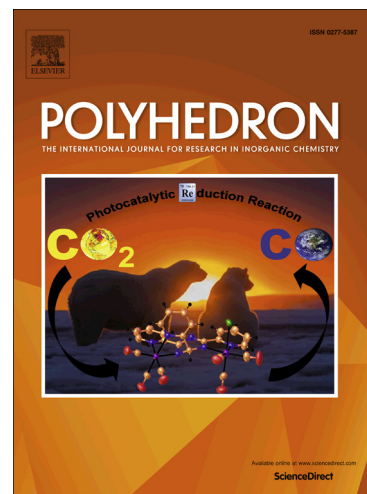
PII: S0277-5387(16)30475-2
DOI: <http://dx.doi.org/10.1016/j.poly.2016.09.045>
Reference: POLY 12233

To appear in: *Polyhedron*

Received Date: 1 July 2016
Revised Date: 23 September 2016
Accepted Date: 26 September 2016

Please cite this article as: N. Mishra, K. Poonia, N. Sharma, S.K. Soni, D. Kumar, Synthesis and characterization of thorium (IV) complexes of 2-aminothiazole and their evaluation as effective antimicrobial and antioxidant agents, *Polyhedron* (2016), doi: <http://dx.doi.org/10.1016/j.poly.2016.09.045>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Synthesis and characterization of thorium (IV) complexes of 2-aminothiazole and their evaluation as effective antimicrobial and antioxidant agents[†]

Neelima Mishra¹, Kavita Poonia¹, Nutan Sharma¹, Sarvesh K Soni^{2*}, Dinesh Kumar^{1*}

¹Department of Chemistry, Banasthali University, Rajasthan-304022

²School of Science, RMIT University, GPO Box 2476, Melbourne, VIC, 3001, Australia.

*Corresponding author's E-mail: dsbchoudhary2002@gmail.com (D. Kumar), sarveshkumar.soni@rmit.edu.au (S.K. Soni)

ABSTRACT

Two novel Th(IV) complexes $[\text{Th}(\text{L}^1)_2(\text{NO}_3)_3]\text{NO}_3 \cdot 6\text{H}_2\text{O}$ and $[\text{Th}(\text{L}^2)_2(\text{NO}_3)_3]\text{NO}_3 \cdot 6\text{H}_2\text{O}$ have been prepared by reaction between nitrate salt of thorium and bidentate Schiff base ligands 2,3-dihydro-1*H*-indolo[2,3-*b*]phenazine-4(5*H*)-ylidene)thiazole-2-amine (L^1), and 3-(methoxy methylene)-(2,3-dihydro-1*H*-indolo[2,3-*b*]phenazine-4(5*H*)-ylidene)thiazole-2-amine (L^2). The compounds were characterised by FTIR, ¹H NMR, UV-vis spectroscopy, magnetic susceptibility, and molar conductivity. The structures of the complexes were determined by powder XRD pattern. Elemental analysis of ligands and their complexes are well agreed with the proposed formulae. The powder XRD pattern of the complexes showed cubic crystal structure. Moreover, the thermal behaviour of the complexes was investigated in the range 30–600 °C, and the results showed that the ligand absolutely decomposed, however the thorium complexes leave metallic thorium oxide as a final residue. The ability of these compounds to inhibit the growth of pathogenic organisms *Bacillus subtilis*, *Staphylococcus aureus* (Gram-positive bacteria), *Escherichia coli* (Gram-negative bacteria), *Candida tropicalis* (yeast) and *Aspergillus niger* (fungal species) were compared to known antibiotics amoxicillin. *In vitro* antioxidant scavenging activity was determined according to the elimination of radicals from 2-diphenyl-1-picrylhydrazyl (DPPH) and H₂O₂.

[†]**Electronic Supplementary Information:** Electronic spectra of ligand (L^2) and $[\text{Th}(\text{L}^2)_2(\text{NO}_3)_3]\text{NO}_3 \cdot 6\text{H}_2\text{O}$ complex, ¹HNMR spectrum of ligand (L^2), ¹HNMR spectrum of $[\text{Th}(\text{L}^2)_2(\text{NO}_3)_3]\text{NO}_3 \cdot 6\text{H}_2\text{O}$ complex and Thermogram of $[\text{Th}(\text{L}^2)_2(\text{NO}_3)_3]\text{NO}_3 \cdot 6\text{H}_2\text{O}$ complex.

Download English Version:

<https://daneshyari.com/en/article/5154625>

Download Persian Version:

<https://daneshyari.com/article/5154625>

[Daneshyari.com](https://daneshyari.com)