Extended Abstract Journal of Cell and Developmental Biology 2018
Vol.2 No.1

Tissue Engineering 2017: Biological potent heteroaryl ketone Schiff base and thorium(IV) complexes of 2-benzoaminothiazole_Neelima Mishra_Sanskriti University, India

Neelima Mishra

Sanskriti University, India

Metal-based antioxidants has received effort in order to identify the compounds having high free radical scavenging capacity related to various disorders and diseases associated with oxidative damage due to reactive oxygen species (ROS). Two mononuclear Th(IV) complexes were derived from 2,3–dihydro–1H–indolo[2,3–b]phenazine–4(5H)–ylidene)benzothiazole–2–amine (L1), and 3–(ethoxymethylene)–(2,3–hihydro–1H–indolo[2,3–b]phenazine–4(5H)–ylidene)benzothiazole–2–amine (L2) with properties of pharmacologically interest. The compounds were characterized by elemental analyses, molar conductance, magnetic susceptibility measurements, FTIR, UV–Vis, 1H NMR, TGA, XRD, SEM studies. In both complexes 2:1 ligand-to-metal ratio has been observed.

Introduction

Oxidative stress, causehigh levels of protein carbonyl content (CO) groups have been observed in diseases such as Alzheimer's disease (AD), rheumatoid arthritis, diabetes, sepsis, chronic renal failure, and respiratory distress syndrome [1]. Schiff base are typically synthesized from an aldehyde or ketone with a primary amine and a wide variety of steric and electronic features into their structure [2-6]. Green chemistry, also known as sustainable chemistry, is the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances [7-9]. Metals are indispensable for life, as they are involved in many fundamental biological processes, including osmotic regulation, catalysis, metabolism, bio mineralization, and signal transduction. Metal-based compounds have an increasing importance in most prominent biomedical applications, as they oï¬€er the possibility of exploring a higher variety of structural motifs and reactivity patterns when compared with purely organic molecules [10]. Thorium(IV)) metal ions have atomic radii 1.17Å and have high positive charge, so that these metals can easily achieve high coordination number. Thorium show complexation tendency in its +4 oxidation easily [7]. Complexes of Th(IV) formed with humates, indicating that Th(IV) preferentially binds to carboxylate groups, which in turn allow for predicting the per mass thorium binding capacity of natural organic matter. The oxidative damage caused by ROS on lipids, proteins, and nucleic acids plays a significant role in the development of life limiting chronic diseases such as cancer, hypertension, cardiac infarction, arteriosclerosis, rheumatism, and cataracts [11,12].The activity is usually increased by complexation, therefore to understand the properties of both ligands and metal can lead to the synthesis of highly active compounds.C. Prabhakaran and co-workers introduced [13] Ni(II) complex of Schiff base showed has an excellent DPPH radical-scavenging effect higher than that of well-known ascorbic acid. Li et al. [14] explained in vitro antioxidant activities of ligands and Sm, La, Nd, and Yb complexes. The results of in vitro SOD and H2O2 scavenging activities of chromone- 3-carbaldehyde-(isonicotinoyl) hydrazone) ligands and their respective metal complexes showed that ligands and their complexes more effective than ascorbic acid. Neelima et al. [15] investigated complex of Th(IV) complexes and their ligands derived from 2,3–dihydro–1H–indolo[2,3–b]phenazine–4(5H)–ylidene)thiazole–2–amine (L1), and 3–(ethoxymethylene)–(2,3–hihydro–1H–indolo[2,3–b]phenazine–4(5H)–ylidene)thiazole–2–amine (L2) have shown antioxidant activities by DPPH and H2O2 scavenging activities methods. Their perceptive binding ability for Th(IV) endows them with potential to reduce the generation of ROS. In this perspective, this finding is an important influence towards mechanistic aspects associated with the promising pharmacological applications and these studies may help to predict the new and novel therapeutic strategies for the treatment of human oxidative-stress based disorders such as muscular dystrophy (MD), Parkinson's diseases, cancer, and arthritis Alzheimer's. Additionally, we also explore excellent antimicrobial activities of ligands and metal complexes by micro broth dilution method.

Biography :

Neelima Mishra has completed her PhD from Banasthali University, India. She is the Assistant Professor of Sanskriti University Mathura, India. She has published more than 15 papers in reputed journals, written two books and has been serving as an Editorial Board Member of national journal. Her research work mainly focuses on syntheses and biological potent of Schiff base metal complexes of La(III), Ce(III) and Th(IV) and syntheses of natural and synthetic polymers. She is the Member of India Science Congress, Chemical Teacher Association, Indian Chemical Society, Royal Society of Chemistry and American Chemical Society.

This work is partly presented at 8th International Conference on Tissue Science and Regenerative Medicine September 11- 12, 2017 held at Singapore