



Biomedical Inorganic Chemistry is an Emerging Subfield of Medicinal Chemistry Focused on the Development of Metal-Based Diagnostic and Therapeutic Agents

Marcia Tatiana*

Department of Chemistry, Technical University of Munich, Germany

DESCRIPTION

Biomedical inorganic chemistry is an emerging subfield of medicinal chemistry focused on the development of metal-based diagnostic and therapeutic agents. This tutorial review aims to provide a timely overview of implementation, recent discoveries, and identify current challenges and opportunities in the field. Three specific areas of discovery are highlighted here. The first part focuses on specific design criteria for the development of metal-based radiopharmaceuticals for diagnostic and therapeutic purposes and radiopharmaceuticals that combine basic aqueous coordination chemistry and pharmacokinetic elucidation. The second part describes an approach to photodynamic therapy with metal complexes. Here we describe photo-physical properties combined with the challenges of carefully controlling the chemical behavior and selective biological deposition of transition metals with significant off-target toxicity. Although surgery could also be curative in some instances, generally, malignant brain cancers, particularly highly malignant ones, have a propensity to regenerate and quickly begin of remission. The objective is to remove as much and vital functions or other crucial cognitive abilities in such instances. It summarizes new strategies for modulating enzyme inhibition using coordination chemistry and highlights the utility of the unique properties of metal ions for characterizing the mechanism of action of these new diagnostic and therapeutic agents.

Metallo drug discovery has evolved in recent years, with several compounds being clinically generated for therapeutic and diagnostic applications in medical imaging. As described here, several research groups in established biomedical inorganic chemistry groups have consistently produced high-quality data, which can be used to advance new drug development

using computational methods. Offers an ideal starting point for. Although public databases contain the chemical structures of representative metallo drugs annotated with biological activity, there is currently no public database of compounds dedicated to metallo drugs. Here, we also discuss the importance, feasibility, applications and challenges of developing a public database of metallodrugs, although consistent representation of metallodrug structures remains a major obstacle. A curated metal compound database will greatly benefit the discovery and development of metallopharmaceuticals.

Pollution of aquatic ecosystems due to increased concentrations of various pollutants. Metal ions pose a threat to humanity as these ecosystems are of great importance for human activity and survival. Exposure to heavy metal ions is responsible for many serious chronic and pathogenic diseases and some types of cancer. Group eleven metal ions severely disrupt proteins, causing DNA damage and oxidative stress. However, detection of these contaminants is mainly based on physicochemical analysis, which is considered ineffective due to its complex nature. Developing biological models to assess the presence of metal ions is an attractive solution that provides more insight into their effects. In this study, we critically review published reports on toxicity assessment of heavy metal ions by *Allium cepa* and *Artemia salina* assays.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

Received:	30-November-2022	Manuscript No:	IPACRH-22-15290
Editor assigned:	02-December-2022	PreQC No:	IPACRH-22-15290 (PQ)
Reviewed:	16-December-2022	QC No:	IPACRH-22-15290
Revised:	21-December-2022	Manuscript No:	IPACRH-22-15290 (R)
Published:	28-December-2022	DOI:	10.21767/2572-4657.6.6.28

Corresponding author Marcia Tatiana, Department of Chemistry, Technical University of Munich, Germany, E-mail: marciatiana@gmail.com

Citation Tatiana M (2022) Biomedical Inorganic Chemistry is an Emerging Subfield of Medicinal Chemistry Focused on the Development of Metal-based Diagnostic and Therapeutic Agents. Arch Chem Res. 6:28.

Copyright © 2022 Tatiana M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.