MODERN EMERGING TRENDS IN CHEMICAL SCIENCES

Edited By

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PRINCIPAL
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Chapter 6

MIXED LIGAND METAL COMPLEXES OF TRANSITION METALS Mn, Fe, Co, Ni AND Cu AS POTENT ANTIOXIDANTS AND ANTIMALARIAL

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INTRODUCTION

During the last few decades, chemistry of coordination compounds has widened and varied considerably. The developments in the field of chemistry of metal complexes were efficient, perhaps partly because of the effectiveness and financial importance of metals and also because of the basic interest in many of the compounds and the intellectual challenge of the structural problems to be solved.

Transition metal ions are playing an important role in biological processes in the human body. Coordination compounds combine the features of metals, which have a wide range of coordination numbers, geometries, variable oxidation states, and ability to bind a variety of organic ligands or mixed ligands in an attempt to get the optimal stability and the biological in vitro activity, where the action of many drugs depends on the coordination with metal ions or the inhibition on the formation of metallo-enzyme.

Coordination chemistry of mixed-ligands with transition and non-transition metal ions is important in metallo-enzymes and other biological activities [1]. In most cases, metal complexes show higher bioactivities than the free ligands [2], and some side effects and drug-resistance may be reduced upon complexation [3]. Mixed ligand complexes differ from traditional complexes in the sense that they are having at least two different kinds of ligands associated with the same metal ion in a complex. The presence of more than one type of ligand in a complex increases chance of variation in properties expected for the complex. This makes the researchers interested in the synthesis of mixed ligand complexes with varying properties. In recent years, many publications are devoted to synthesis and characterization of mixed ligand complexes [4-5]. In present investigation synthesized mixed ligand complexes are summarized for their antimalarial and antioxidant activities.

ANTIMALARIAL ACTIVITY

Malaria is one of the most infectious diseases affecting to health and developmental growth of developing countries [6]. It is present in 91 countries, mostly in tropical and subtropical regions and the incidence of malaria becoming serious owing to globalization in the world.

About the Editors

DR. SATISH BABULAL JADHAV presently working as an Assistant professor in the Department of Chemistry, R. B. Attal Arts, Science and Commerce College, Georai, Dist- Beed, Maharashtra. He completed his Ph. D. in 2017 in Organic Chemistry from Dr. Babasaheb Ambedkar Marathwada University, Aurangabad Maharashtra. He has 18 years of teaching experience in various U. G. and P. G. Colleges and 11 years of research experience in the areas of Synthesis of heterocyclic molecules, Medicinal and Pharmaceutical Chemistry. Since 2019 he has been working as Beed Regional Academic Counselor of IGNOU-New Delhi. He Published 41 research papers in various National and international journals with high impact factors and among them, 10 papers are in Scopus. He has published 3 patents and 1 patent is granted. He has written 1 book for M. Sc., edited 2 books, and 3 book chapters are credited so far. He has completed one Minor research project funded by Dr. Babasaheb Ambedkar Marathwada University, Chhatrapati Sambhajinagar, and Maharashtra. He participated and presented research papers in more than 18 national and international conferences and workshops all over India. He has been a part of editorial board member and peer reviewer in various national and international journals. He bagged the "Best Researcher" award in 2019 from the VD GOOD Professional Association, India. Recently he received the "Best Editor-2022" award from the Indian Journal of Pharmacy and Pharmacology.

MR. PRASHANT KANTRAO VIBHUTE is presently working as an Assistant Professor of Chemistry in Marathwada Shikshan Prasarak Mandal's, Shri Shivaji College, Parbhani, Maharashtra. He qualified NET-CSIR-JRF in 2009 with all India rank 29, and also selected for prestigious Shama Prasad Mukherjee fellowship. He has teaching experience of 12 years at UG and PG level. He also has 13 years of research experience including one year research experience in CSIR institute, Indian Institute of Chemical Technology, Hyderabad. His research area of interest includes Organometallics, Organic Synthesis, Medicinal and Pharmaceutical Chemistry etc. Till now, he has published 20 research papers in various national and international journals of repute. One Indian patent has been granted and another is published. He is also author of one national and two international level book chapters. He is life member of various journals as well as the Indian Science Congress Association. Since 2012, he has been working as an Academic Counsellor of IGNOU. He has participated and presented research papers in more than 25 national, international conferences and workshops all over India. He has delivered more than 15 guest lecturers in different colleges of the Maharashtra.

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