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CURRENT MEDICINAL CHEMISTRY

ABOUT THE JOURNAL

Current Medicinal Chemistry covers all the latest and outstanding developments in medicinal chemistry and rational drug design. Each issue contains a series of timely in-depth reviews and guest edited thematic issues written by leaders in the field covering a range of the current topics in medicinal chemistry. Current Medicinal Chemistry is an essential journal for every medicinal chemist who wishes to be kept informed and up-to-date with the latest and most important developments.

THEMATIC ISSUE

Role of metal ions complexes and their ligands in medicine, pharmacy and cosmetology

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Transition metal complexes are an interesting group of compounds, which play an important role in many biological systems. The role of metal ions can be analyzed in several ways: metal-based chemotherapeutic drugs, metal ions in diseases, antimicrobial agents, metal-drug interaction, metalloproteins as drug targets. The metal ions are used as catalysts in major life processes such as respiration, metabolism, photosynthesis, transmission of nerve impulses, muscle contraction, and protection against toxic and mutagenicfactors. The historical role of metal ion complexes started from platinum-based drugs in clinical usage for more than 30 years. The discovery of the antitumoral properties of cis-diamminedichloroplatinum(II) (cisplatin) by Rosenberg in 1965 heralded a new area of anticancer research based on metallopharmaceuticals.

In addition to the antitumor activity, metal ion complexes play a crucialrole as antimicrobial agents. Unearthing the role of metal ions complexes involves researchers a wide range of scientific fields. Many proteins, enzymes and other biological species for their activities need to have metal ions. Moreover, many scientific articles report about metal toxicity, transport and homeostasis. The major endogenous metals iron, copper and zinc have well defined mechanism of action. Although diseases associated with transport and homeostasis abnormalities are those of great interest, there is still a variety of the phenomena associated with these processes are under debate (Wilson's disease, Alzheimer's disease and Thalassemia). Special attention has been given to mitochondria-targeting diseases and metalothioneins. The main functions of numerous metalothioneins are detoxification, free radical scavenging, immune response and protection from metal toxicity.