

Book Review

TO THE MONOGRAPH STUDY OF USEFUL PROPERTIES OF SOME
COORDINATION COMPOUNDS CONTAINING OXIMIC LIGANDS,
AUTHORS: E. COROPCEANU, A. CILOCI, A. ȘTEFÎRȚĂ, I. BULHAC,
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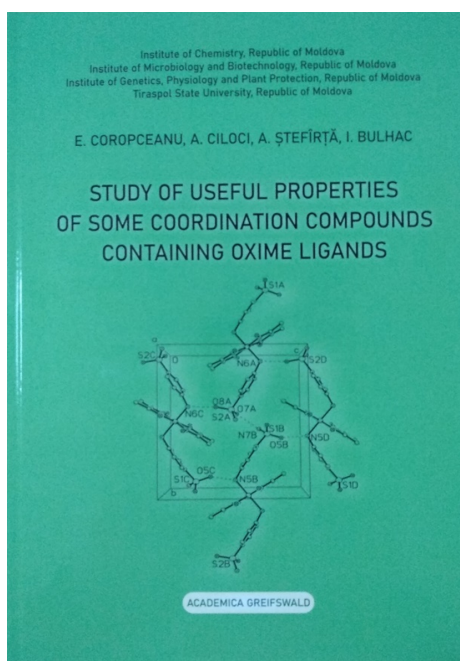
One of the important goals of contemporary chemical synthesis is to obtain substances with useful properties for various economic fields. Coordination compounds present complex substances, which include metal ions, as well as the organic part, very diverse, possessing different functional groups with electron-donating atoms, which confer a wide diversity of composition, structure, and properties. In most metal complexes, the atoms generating the complex are the biometals – the action of which is linked to specific proteins and enzymes. Metal ions play an important role in enzyme catalysis processes. Ligands in the composition of coordination compounds can present molecules with biological properties, etc.

The monograph STUDY OF USEFUL PROPERTIES OF SOME COORDINATION COMPOUNDS CONTAINING OXIMIC LIGANDS is a synthesis of the works of the Coordination Chemistry, Enzymology and Plant nutrition and water regime laboratories during the last two decades. The monograph consists of four chapters, accompanied by bibliographic sources. In chapter I. AN OVERVIEW OF THE PERSPECTIVES OF USING COORDINATION COMPOUNDS BASED ON DIOXIME LIGANDS, the specifics of the compounds of this class and the properties they exhibit for different fields are analyzed: biotechnologies, dyes, materials useful in water decomposition processes, etc. Cobalt dioximates are compared to vitamin B12, a fact that allows the initiation of syntheses for obtaining artificial molecules based on natural models with an impact on biological systems. In addition, a series of vitally important compounds are metal complexes: hemoglobin (central atom – Fe^{2+}), chlorophyll (central atom – Mg^{2+}), etc. The high activity of metal complexes can be explained by the energetic and conformational state of the molecular tension, conditioned by the spatial geometry, the specific system of bond lengths, the coordination number, etc.

In chapter II. THE INFLUENCE OF DIOXIME LIGANDS BASED COMPLEXES ON THE BIOLOGICAL ACTIVITY OF SOME ENZYME-PRODUCING FUNGI STRAINS, the influence of coordination compounds on different species of industrially important fungi is analyzed. The high technological properties of fungi that ensure their priority over other microorganisms are: short development cycle (2-10 days), adaptive metabolism, unusual intensity of cell synthesis, assimilation of a wide range of different substrates presented in the most frequent cases of by-products and waste of different productions and agriculture, the high yield and purity of the final product. The ability of micromycetes to secrete enzymes in the culture medium gives them additional biotechnological importance. The following strains were selected for research: *Aspergillus niger* 33 (V.Tiegh, Rape, Fenell), CNMN FD 06 and *Aspergillus niger* 33-19 (V.Tiegh, Rape, Fenell) CNMN FD 02 – amylase-producing *Rhizopus arrhizus* (File 67) and *Penicillium viride* (Fresenius Beitz) CNMN FD 04 – producing pectinases, *Aspergillus niger* 412 CNMN FD 01 and *Rhizopus arrhizus* Fişer CNMN FD 03 – producing lipases, *Trichoderma koningii* Oudemans CNMN FD 15 and *Fusarium gibbosum* CNMN FD 12 – producing proteases, *Aspergillus niger* (V.Tiegh) CNMN FD 10, *Aspergillus terreus*, *Aspergillus flavus* (Link), Reaper, Fenell BKM F3292D and *Penicillium expansum* (Link) Thom CNMN FD 05 – cellulase and xylanase complex producers.

In Chapter III. THE EFFECT OF SOME COORDINATION COMPOUNDS

ON PLANT PHYSIOLOGICAL PROCESSES UNDER THE IMPACT OF ECOLOGICAL STRESS it is analyzed the influence of some coordination compounds and some compositions on some higher crop plants: *Zea mays* L., hybrids M 291 and P 459; *Phaseolus vulgaris*, L., Porumbita variety; *Glycine max*, Merr., (L.), Bucuria variety; *Cucumis sativus* L., Concurent and Mirabella varieties and Rodnicioc F1 and Icar F1 hybrids; *Lycopersicon esculentum* L., cv. Leader; *Arachis hypogaeae* (L.), variety Fazenda 2., beetroot plants (*Béta vulgaris* L. var. conditiva Alef.); sugar beet (*Béta vulgaris* L., Baracuda soil), garlic (*Allium sativum*, L., Izumrud variety) and al.



The results of the study demonstrate that the treatment of the seeds for sowing and the leaf apparatus during the vegetation, with aqueous solutions of Difecoden, Difemanden, Coditiaz, Conimid, Cobamid conditions the optimization of the functional state, growth and development of corn, soybean, sugar beet, cucumber, tomato plants, red beets, peanuts, both in favorable moisture conditions and in a moderate water deficit. The coordination compounds Difecoden, Conimid and Fludisec possess antioxidant properties that are manifested in increasing the antioxidant protection capacity of the organs of the treated plants as a consequence of the intensification of antioxidant enzyme activity in them with a positive impact on plant productivity.

In chapter IV. PERSPECTIVES OF USING COORDINATION COMPOUNDS BASED ON DIOXIME LIGANDS IN INDUSTRIAL PROCESSES there are presented potential fields of use of compounds of this class: the textile and chemical industry, in the urban household to protect and extend the term of exploitation of closed networks, where it is used as water agent, in the electronics industry and others.

The monograph was awarded at the EuroInvent International Invention Fair, Iași, Romania, with the gold medal. The monograph is valuable and useful for familiarizing students of the first cycle with modern achievements in the field of coordination chemistry, serving as course support for the Basics of Coordination Chemistry subjects, for the second cycle – for the course Oximates of Transition Metals, as well as for doctoral students in the field of coordination chemistry and biotechnologies.

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(Boris Nedbaliuc) ION CREANGĂ STATE PEDAGOGICAL UNIVERSITY, 1 ION CREANGĂ ST., CHIȘINĂU,
REPUBLIC OF MOLDOVA