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PROCEEDING &
ABSTRACTS BOOK

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XI. IMCOFE MIGRATION AND CLIMATE CHANGE



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FOREWORD

IV. International Congress on New Trends in Science, Engineering and Technology (ICONTRENDS) was held by "Young Scholars Union" at St.Petersburg/RUSSIA from 7 to 9 July 2020. ICONTRENDS is aimed to come together with scientific studies scholars working in different disciplines, to exchange knowledge and experiences and thus to prepare the ground for multidisciplinary studies.

A total of 64 papers were submitted. 64 participants from 8 countries in total have attended the congress. 30 participants from Turkey, 19 participants from Azerbaijan, 7 participants from Serbia, 2 participants from Estonia, 2 participants from Lithuania, 2 participants from Pakistan, 1 participant from Kosovo and 1 participant from Kazakhstan.

XI. IMCOFE organized with the main theme of "Trend Topics of the fields of science, technology and engineering in recent years". We are proud to successfully complete this congress.

This book contains the full text and abstract texts of the papers presented at the congress. The fact that a significant portion of the participants are university undergraduate, graduate and doctoral students is important in terms of realizing the mission of our union.

Our mission will increasingly continue with the workshops, congresses and conferences to be held next year.

In 2020, when many congresses were postponed and canceled due to the pandemic, we held our congress without any problems, postponement or cancellation. This has been accomplished with the great effort of our members who take part in our union and organizing board. In the light of all these, I would like to thank our participants, the scientific and organizing board, our audience, our sponsors and our solution partners.

Dr. Christian Ruggiero
Congress Chairman

Interaction of The Silver(I) Ion With a Ligand of The Thiohydantoin Moiety

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Abstract

Purpose

As the threat of multi-drug resistant strains poses a serious global problem, the search for new antibacterial and antifungal therapeutics gains significant importance. Antimicrobial resistance has contributed to increases in morbidity, mortality and healthcare expense. The purpose of our study is to find new, potent antimicrobial agents which will combat this widespread health issue by discovering new compounds with potential activities.

Silver and its complexes have a huge therapeutic potential due to their bioactivities. Numerous silver(I) complexes with nitrogen-, oxygen-, phosphorus- and sulphur-donor ligands have been synthesized and evaluated as potential antibacterial and antifungal agents.

Hydantoins are a large family of structurally diverse drug-based compounds that exhibit a variety of different activities and they have found applications in many fields such as medicine, industry, agriculture etc. It is documented that the coordination of hydantoins with transition metals often leads to amplification of their biological activities.

Design / Methodology / Approach

In this study, a reaction of AgNO₃ with a 2-thiohydantoin derivative, 5-[2-(methylthio)ethyl]-3-(2-propen-1-yl)-2-thioxo-4-imidazolidinone was monitored by time dependent ¹H NMR spectroscopy. All reactions were performed in acetone-d₆ solutions at ambient temperature, by mixing equimolar amounts of the reactants.

Findings

Silver has several modes of coordination and thiohydantoins have several possible donor atoms. 5-[2-(methylthio)ethyl]-3-(2-propen-1-yl)-2-thioxo-4-imidazolidinone has two coordination spots that we have turned our focus to, the thioether sulphur in the side chain and the NH proton in the thiohydantoin ring. No change in the integral values of the NH proton signal was detected in the time dependent ¹H NMR spectroscopy, while the CH₃-S proton signals have shifted from 2.08 to 2.16 ppm. This indicates that coordination, in fact, did occur to the side chain thioether sulphur. Additional efforts will have to be made towards obtaining monocrystals, so that the complex can be fully characterized.

Originality / Value

The results obtained from herein could contribute to a better insight into silver and hydantoin chemistry, the mechanisms of their interaction, and also might lead to the synthesis of silver complexes with potential antimicrobial activities.

Keywords: *Hydantoin Chemistry, Antimicrobial*