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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

1H NMR Monitoring of Reactions Between a Thiohydantoin Derivative and Various Palladium(II) Complexes

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Abstract

Purpose

As cancer persists as one of the biggest threats to human health globally, the need for more potent, less toxic and harmful anticancer agents rises. The design and testing of such new potential agents has been a collaborative effort of chemists, biologist and pharmacologists for decades.

Thiohydantoin is a large family of drug-based heterocycles with many biological activities and applications, including anticancer activity. This pharmacologically interesting moiety has been under the radar for anticancer research for quite some time now.

Ever since the advent of cisplatin, platinum has been the number one metal in anticancer research. A number of platinum complexes are now used clinically for anticancer treatment. For investigation of chemical interactions, palladium is often used as a model instead of platinum, because it is cheaper and reacts identically. This is a trait that is employed in this study.

Design / Methodology / Approach

Reactions of 3-[(phenylethylene)amino]-2-thioxo-4-imidazolidinone with PdCl₂, Pd(DMSO)₂Cl₂ and K₂PdCl₄ were monitored using time-dependent ¹H NMR spectroscopy. All reactions were performed at ambient temperature in DMSO-d₆ as solvent by mixing equimolar amounts of reactants.

Findings

Under the given experimental conditions, there was no reaction with K₂PdCl₄. In both other cases, concerning PdCl₂ and Pd(DMSO)₂Cl₂, the signal of the NH proton of the starting thiohydantoin has vanished, which indicates coordination in that position. Also, in both cases, the benzyldiene double bond proton has doubly shifted from 8.30 ppm to 9.19 and 10.08 ppm, indicating that two different complexes were formed. This is also backed up by the two shifts of the CH₂ proton signals from the thiohydantoin ring, shifting from 3.95 ppm to 4.08 and 4.15 ppm. The first one is shifted as a consequence of the NH deprotonation and coordination to the N1 thiohydantoin nitrogen, while the other signal is shifted most likely due to coordination to the imine nitrogen. These results are promising and the exact structure of these complexes will be obtained after their preparative synthesis and X-ray crystallographic analysis.

Originality / Value

The results obtained in this study could contribute to a better understanding of hydantoin chemistry, as well as palladium and/or platinum chemistry and mechanisms through which they interact. The results might also lead to the synthesis of novel palladium/platinum complexes with potential anticancer activities.

Keywords: *Palladium(Ii) Complexes, Thiohydantoin, Nmr Monitoring*