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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

Antimelanogenic Activity of Novel 2-thiohydantion Derivatives

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Abstract

Purpose

The main purpose of this study was to synthesize novel bioactive molecules based on the 2-thiohydantoin moiety and address their antimelanogenic potency and potential for therapeutic application in the treatment of skin hyperpigmentation disorders in humans (freckles, chloasma, melasma, senile lentigines, ephelides and melanoderma).

Design / Methodology/ Approach

A series of 2-thiohydantoin derivatives has been tested in the zebrafish model, a powerful and highly predictive biotechnological animal platform used for toxicity assessment and biological activity evaluation of novel bioactive molecules, simplifying thus the path to clinical trials and reducing the failure at later stages of testing. The zebrafish embryos were exposed to six different concentrations of newly synthesized 2-thiohydantoin derivatives at developmental stage of 6 hpf (hours post fertilization), and analysed for toxicity (survival, cardiotoxicity, hepatotoxicity and teratogenicity) and antimelanogenic activity by 120 hpf. Their antimelanogenic activity and toxicity were compared to those of Kojic acid and hydroquinone, well-known depigmenting agents used for the treatment of skin hyperpigmentation disorders.

Findings

Out of 11 tested 2-thiohydantoin derivatives, 9 compounds reduced body pigmentation of the treated zebrafish embryos with different efficacy. Among them, three derivatives exhibited the best melanogenesis inhibitory activity, decreasing the body pigmentation at a dose of 5 μ M, while did not cause any adverse effect at the 10-fold higher dose. Moreover, each of these compounds exerted much better therapeutic profile than Kojic acid and hydroquinone, the former of which was non-toxic and poorly effective and the latter highly effective but extremely toxic. These data indicated that 2-thiohydantoin derivatives present novel effective and safe depigmenting agents with a potential application for the treatment of skin hyperpigmentation disorders in humans.

Originality / Value

The presented results of biological activity evaluation in vivo clearly demonstrate that compounds with 2-thiohydantoin moiety could present a novel effective and safe antimelanogenic compounds with a large potential for further clinical evaluation and therapeutic application in humans.

Keywords: 2-Thiohydantoin, Antimelanogenesis, Zebrafish Model