

Conference Report

Abstracts of the 4th International Electronic Conference on Nutrients (IECN 2024), 16–18 October 2024

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Abstract: The 4th International Electronic Conference on Nutrients—Plant-Based Nutrition Focusing on Innovation, Health, and Sustainable Food Systems (IECN 2024) took place online from 16 to 18 October 2024, which aimed to serve as a multidisciplinary platform for the exploration of innovative research and advancements in nutrient science with a focus on innovations for health and sustainability. Over 150 scholars and experts attended this virtual online conference. Five keynote speakers and seven invited speakers shared their knowledge and discoveries. The conference received 220 abstracts submissions, of which 147 were accepted. This conference report is an abstract collection from six different sessions of IECN 2024.

Keywords: nutrient science; sustainable food systems; plant-based diet; innovation in nutrition; clinical nutrition; sports nutrition; environmental sustainability



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1. Introduction

The 4th International Electronic Conference on Nutrients (IECN 2024), 16–18 October 2024, was an exclusive meeting dedicated to the latest developments in scientific research in the field of nutrient research with a focus on innovations for health and sustainability. This conference aimed to serve as a multidisciplinary platform for the exploration of innovative research and advancements in nutrient science. Emphasizing both macro- and micronutrients, the conference delved into novel methodologies for nutrient extraction, bioavailability, and functional food development. Analytical techniques such as metabolomics, proteomics, and nutrient profiling were discussed in the context of their application to food safety and quality. As the global search for healthier and more sustainable diets intensifies, the role of nutrients and lifestyle modification are at the forefront. For a healthier and more sustainable diet, it is clear that most people will need to incorporate more plant-based foods into their diet. Moreover, as we strive to feed a growing global population, the role of plant-based foods becomes increasingly critical. The aim was to explore the effectiveness of using plant-based nutrition as a primary approach in preventing, suspending, and even reversing chronic diseases. Furthermore, the conference aimed to foster dialogue on the critical intersections between nutrient science, public health, and sustainable food systems. Our collective goal is to challenge existing scientific paradigms, broaden the scope of research, and contribute to an integrated approach where innovation, health, and sustainability coexist harmoniously.

The topics of this conference are outlined below:

- S1. Plant-Based Diets: Health and Well-being;
- S2. Innovation in Dietary Choices;
- S3. Diet and Chronic Disease Management;
- S4. Global Nutrition Trends: Shaping Health and Athletic Performance;
- S5. Behavioral Approaches to Healthier Eating;
- S6. Nutrition Across the Lifespan.

steatosis), using 3T3-L1 preadipocytes (according to a differentiation protocol) and HepG2 cells (steatosis-induced with oleic acid), respectively. Bixin was administered in the concentration range of 1–20 µg/mL (obesity model) and 2.5–10 µg/mL (NAFLD/steatosis model). The neutral lipid content was estimated using Oil Red O staining; ROS/RNS were quantified using 2',7'-dichlorofluorescein diacetate (DCFDA), nitrite assays, and malondialdehyde (MDA); and the biochemical marker of lipid peroxidation was assessed using the TBARS assay.

Results: At lower concentrations, 5 µg/mL in steatotic cells and 10 µg/mL in matured adipocytes, bixin significantly reduced lipid accumulation in both hepatocytes and adipocytes ($p < 0.05$), demonstrating its potential as an anti-steatotic and anti-obesity agent. This beneficial effect was correlated with a reduction in oxidative stress levels (decreased MDA and ROS/RNS levels). Strikingly, bixin at higher concentrations (>10 µg/mL) showed increased lipid accumulation and oxidative stress.

Conclusions: Bixin exhibits anti-obesity and anti-steatotic effects at lower doses, which correlates with its antioxidant properties. However, its bioactivity is dose-dependent, wherein at higher concentrations, it ceases to inhibit adipogenesis. This opposing response is accompanied by elevated oxidative stress levels, indicating a pro-oxidant effect at higher doses, which implicates its anticancer potential. The present study highlights the significance of dosage optimization of nutraceuticals and dietary ingredients with respect to their intended biological applications, such as MetS and cancer treatment.

4.4. Warfarin–Supplement Interactions: A Systematic Review

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Introduction: Food supplements, which are concentrated forms of nutrients, play a crucial role in maintaining a balanced diet by providing essential missing nutrients. However, their impact on drug interactions cannot be overlooked. One such drug is warfarin, which is an anticoagulant with a complex interplay involving various medications, foods, and supplements. Given the significant increase in the use of dietary supplements in recent years, there is a compelling rationale to investigate their interactions with warfarin. This systematic review aims to identify supplements that interact with warfarin, thereby providing insights into potential risks and implications.

Methodology: In order to address the research question “What potential drug interactions may arise when food supplements are taken concomitantly with warfarin?”, a PRISMA 2020 systematic review was conducted. To accomplish a comprehensive understanding of the issue at hand, several databases were consulted. In order to fulfill the search platforms’ requirements, the terms “interactions”, “warfarin”, and “supplements” were combined in multiple ways. The inclusion criteria took into account original, randomized or non-randomized studies and case studies that mention a supplement used concomitantly with warfarin. An artificial intelligence-based tool was used to evaluate the studies’ quality. The obtained results were summarized in a table format, detailing the supplement used and the how the interaction occurs.

Results: A search of the literature yielded 968 articles, of which 14 were selected for review. These articles met the specified criteria, namely the use of a dietary supplement concomitantly with warfarin. Of these, 11 indicated a potential interaction, while three articles suggested that no interaction occurred.

Conclusions: This work clarified the interactions between supplements and warfarin, emphasizing supplements such as dong quai, milk thistle, and American ginseng, which alter the mechanism of action of the drug. Furthermore, it is imperative for patients to seek counsel from healthcare professionals before modifying their dietary regimen.