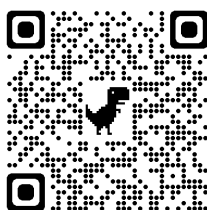


CURRENT RESEARCH TOPICS IN PHARMACY:

Herbal Drug Research

November 24th, 2022 14.00 PM ISTANBUL

FOR REGISTRATION:



First Session- Moderator: Betül OKUYAN 14.00-15.30 PM

Welcome- Prof. Hatice Kübra ELÇİOĞLU

Safety of herbal drugs- Assist.Prof. Ayfer BECEREN
Marmara University, Istanbul, Turkey

Antibacterial herbal effect applied in cosmetic emulsion preservation- Dr.Rezarta SHKRELI
Aldent University, Tirana, Albania

R&D studies in the development of traditional herbal medicinal products- Prof. İ. İrem TATLI ÇANKAYA
Hacettepe University, Ankara, Turkey

Second Session- Moderator: Betül OKUYAN 16.00-17.30 PM

The role of metabolomics in medicinal plant science-Prof.Emirhan NEMUTLU
Hacettepe University, Ankara, Turkey

Using diterpenoids from *Plectranthus* spp. As starting tool in drug development- Assoc.Prof.Patricia RIJO
Lusofona University, Lisbon, Portugal

Herbal drugs as novel antibacterials- Assoc. Prof. Entela HALOCI
University of Medicine, Tirana, Albania

The potential of certain phytochemicals as essential nutrients- Asst.Prof. Lukasz CIESLA
The University of Alabama, Tuscaloosa, USA

Chair

Prof. Hatice Kübra ELÇİOĞLU

Vice Chair

Prof. Levent KABASAKAL & Assoc. Prof. Esra TATAR

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Journal of Research in Pharmacy

An international open-access journal of pharmacy and pharmaceutical sciences

Formerly published as Marmara Pharmaceutical Journal

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SYMPOSIUM

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SAFETY OF HERBAL DRUGS

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The quality and efficacy of treatment in the healthcare industry have dramatically changed over the last century as a consequence of advancements in medical science, mass manufacturing of chemically synthesized pharmaceuticals, and technologies. However, due to the fact that natural treatments are more accessible but also less expensive than prescribed medicines, significant percentages of the population preferring to use herbal medicine for their primary care. Furthermore, it is believed to be more natural and safer than pharmaceutical medications. Additionally, the demand for herbal treatments has been growing globally in recent years as a result of medicinal plants' gaining popularity and use. Different biological activity could be identified in herbal extracts and for active constituents. Many disorders, including diabetes, autoimmune disorders, cancer, asthma, allergies, epilepsy, and Alzheimer's disease, are effectively treated with medicinal herbs.

It is believed that plants are used to make 25% of conventional medications. Aspirin, artemisinin, ephedrine, and paclitaxel are the examples of first used medicines [1]. In response to rising demand, several well-known pharmaceutical firms are doing research on the development of herbal supplements with varied biological activities. By 2027, the global herbal supplements industry is expected to reach 119.9 billion US dollars [2]. According to the World Health Organization, herbal medications are used by 80% of the world's population [3]. Despite the fact that herbal remedies are generally recognized as safe and effective, many publications about side effects, adverse effects, and adverse reactions are associated with the use of herbal medicines highlighted that “as the use of herbal medicines has increased, so too have the reports of suspected toxicity and adverse events” [4].

Adverse effects of herbal drugs might occur via intrinsic or extrinsic effects. The extrinsic effects are not just related to the plant itself, but are also a problem in commercial production as well as from contamination, adulteration, misidentification of plants or interactions with other herbal preparations. To identify and reduce the risk of these problems, effective identification systems and reliable methods for detecting foreign material are required for revealing quality and purity of herbal medicines. On the other hand, the intrinsic effects can be caused by herbal medication side effects, reactions occurring as a result of overdose or over duration, tolerance, dependence-addiction, hypersensitivity, allergic and idiosyncratic reactions, and chronic toxic effects including liver, renal, cardiac and neurotoxicity and even genotoxicity and teratogenicity which can be life-threatening [5].

Many medicines and herbal remedies interact with each other and can harm one's health. There are also numerous publications on this topic. As an example on this subject; the main issue with using St. John's wort supplement has been reported as interaction with a variety of medications. St. John's wort's active ingredient, hyperforin, induces a variety of cytochrome P450 liver isoenzymes, including CYP3A4, CYP2E1, and CYP2C9. P-glycoprotein transport activity was inhibited in a dose- and time-dependent

manner by a St. John's wort extract containing hyperforin, hypericin, and quercetin. In contrast to quercetin and hypericin, which alter transporter function through protein kinase C, St. John's wort extract and hyperforin directly reduce P-glycoprotein activity. St. John's wort can therefore interact with medications that are processed by the liver's cytochrome P450 enzymes as well as medications that are substrates for P-glycoprotein but are not metabolized by the liver, leading to treatment failure because of subtherapeutic levels of these medications. Immunosuppressants, anticoagulants, statins, calcium channel blockers, β -blockers, cardiac inotropic drugs, antiretroviral drugs, anticancer drugs, benzodiazepines, antidepressants, antiepileptic drugs, and oral contraceptives have all been related to clinically significant interactions with St. John's wort. While the majority of drug interactions involving St. John's wort are pharmacokinetic interactions that could lead to treatment failure, there have also been reports of pharmacodynamic interactions between St. John's wort and selective serotonin reuptake inhibitors like paroxetine, sertraline, venlafaxine, and nefazodone that result in central serotonin syndrome [6].

Estimations are around 1 billion \$ for a single novel drug, moreover drug development is a time-consuming process, with 12-15 years from finding a hit to the clinical application [7]. Preclinical and clinical trials must be completed before a drug marketed to the public, and the studies must confirm that the drug is safe. On the other hand, until they are demonstrated to be hazardous, supplements are generally regarded as safe. European Union Directive 2001/83/EC states that if there is adequate human experience, toxicology tests for herbal medicines are not necessary. Products that have demonstrated a medical use for at least 30 years and those that have a traditional usage for at least 15 years in Europe may be registered as herbal medicinal products under (Directive 2001/83/EC) and Health Authority Regulations [8]. Take into consideration that supplements, unlike medicines, are not required to be tested for QSEM. Drug interactions' effects on patient safety are a major concern for public health systems around the world. Preclinical, clinical, and post-marketing research should be conducted in collaboration with one another to educate and practice and set regulations in order to reduce this impact. Adverse event information is also needed to be collected for herbal drugs. Pharmacovigilance system needs spontaneous reports against uncertainties of herbal drugs to manage the risk for public health. It is necessary to report adverse reactions accurately in order to identify serious adverse events and provide practitioners and patients with the proper cautions and instructions. Pharmacovigilance of herbal medications is critical to ensure their safety, purity, and efficacy throughout their use in healthcare practice. Furthermore, Health Authority Regulations need to provide global management and quality standards for radical herb sources, seed and seedling breeding, planting, harvesting, and storage, logical procedures, manufacture, and quality requirements [9-10].

Keywords: pharmacovigilance, drug-herbal_interactions, herbal medicinal products

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