A Special Journal Issue: Sustainable Drug Delivery Systems and Therapies for Pediatric and Geriatric Populations

This special issue gives an insight into scientific developments of the research program *"Pharmaceutical Technology & Pharmacotherapy: Sustainability for the Future"* at the Faculty of Pharmacy, University of Ljubljana. Sustainability represents the capacity to meet present needs while ensuring the preservation of resources and opportunities for future generations. This program focuses on pharmaceutical technology and pharmacotherapy as key domains where sustainability plays a pivotal role in relation to the development, manufacturing and use of medicines. The program embraces the personalization of treatment, which is particularly pronounced and important in the treatment of children and the elderly. In both patient groups, the pharmacodynamics and pharmacokinetics processes are significantly altered due to growth and development in children or the complex ageing process in the elderly.

The program interconnects three departments at the Faculty of Pharmacy, University of Ljubljana. The Department of Pharmaceutical Technology brings expertise in the development and optimization of pharmaceutical formulations, drug delivery systems, and manufacturing processes. Their knowledge and research focus on innovative technologies, such as nanotechnology, patient friendly dosage forms and green technological processes, ensuring the development of sustainable and efficient drug products. The Department of Biopharmaceutics and Pharmacokinetics provides expertise in pharmacokinetics and pharmacodynamics, enabling a comprehensive understanding of drug behaviour, optimization of dosing regimens and enhancement of therapeutic outcomes. The Department of Social Pharmacy explores the social, economic, and behavioural aspects of medication use. Their expertise in patient-centred care and healthcare systems allows for an evaluation of the social implications of pharmaceutical practices. Through shared knowledge, expertise, and resources, this collaborative research group can drive advancements in pharmaceutical sciences, optimize therapeutic outcomes, promote sustainable drug development, and contribute to the betterment of patient care and public health.

The issue includes four review articles. Three of them cover the field of pharmaceutical technology: one article addresses the challenges frequently associated with younger patients by providing an overview of the current state of the art in taste masking techniques, with a particular focus on taste masking by film coating. Methods for evaluating the effectiveness of taste masking are also discussed. Another review focuses on lipid-based systems with precipitation inhibitors as a formulation approach to improve drug bioavailability and/or lower drug dose. The third article presents the potential of three-dimensional printing to overcome the challenges and provide tailored doses for paediatric patients. One of the review article is more clinically orientated as it examines systematic reviews of deprescribing studies by intervention, population, medicine, and setting char-

acteristics. Clinical and humanistic outcomes, barriers and facilitators, and tools for deprescribing are presented.

Additionally, five original research papers focusing on sustainable and patient centred drug development are included in this issue. One study simulates the effect of water gastric emptying patterns on the release of model drugs in an *in vitro* glass-bead flow-through dissolution system. Another study focuses on lyophilised protein formulations for subcutaneous administration as a patient-centric dosage form presenting less invasive alternative to intravenous systems and allowing self-administration by the patients. The remaining original research articles are more clinically orientated. One article evaluates the effect of hempseed or flaxseed oil-based lyotropic liquid crystals, as one of the most perspective systems for dermal delivery, on skin barrier function in a clinical study with healthy adults. Another study investigated the influence of body composition on the pharmacokinetics of ramipril and its active metabolite ramiprilat in patients with chronic health failure and evaluated the changes in pharmacokinetics after prolonged therapy. In addition, a retrospective drug utilization analysis examined the 10-year trend in the sedative and anticholinergic burden among older adults in Slovenia to identify opportunities for optimising pharmacotherapy in this population.

A short communication is also published, in which the authors developed a sensitive method for monitoring remifentanil levels in neonates by non-invasive sampling of umbilical cord blood to support efficacy and safety studies.

Finally, we would like to thank to the authors who published their research findings in this issue, the reviewers, and the Editor-in-Chief and Technical Editor, for their contribution to the preparation of this issue.

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