Advances in Medicinal Chemistry from Analytical Perspectives

After the development of technology, pharmaceutical analysis in medicinal chemistry has become important for the drug development, fabrication stage, formulation, stability and quality. The development of sensitive, selective and fully validated, new analyzing methods for pharmaceutical dosage forms is important and continuous. From this point of view, I invite you to meet "Current Medicinal Chemistry" current issue under the thematic issue called as "Advances in Medicinal Chemistry from Analytical Perspectives".

The aim of the proposed special issue is to focus on the novel developments in medicinal chemistry from analytical point of view including novel developments on drug analysis, medicinal chemistry, drug targets and disease mechanism, dissolution test profiles, all analytical techniques for medicinal chemistry such as solid phase extraction, LC analysis, spectroscopic, chemometric, electrochemical techniques etc. This special issue is contributed to the field since the recent developments in medicinal chemistry researches are important and continuous. In this thematic issue you may find new innovations in medicinal chemistry, recent researches on drug targets and disease mechanism, dissolution test profiles, new analytical methods for medicinal products, novel developments on drug assay, assay methods and validation processes in drug analysis.

In this thematic issue, there exist 13 review papers by several important scientists who contributed their ideas. In the latest years, a large number of adsorbent carriers of natural and synthetic origin have increasingly attracted attention due to their biocompatibility, acceptable ecological and toxicological characteristics, high capability for simple modification of physical chemical characteristics, high stability and a relatively low price.

Subsequently, in this issue, the first review, by Razic, addresses the “Analytical approaches to the characterization of solid drugs delivery systems with porous adsorbent carriers”. Korecká et al., shared their ideas about “Immunosensors in Early Cancer Diagnostics: From Individual to Multiple Biomarker Assays”. In this review, recent developments in the area of electrochemical immunosensors applicable for the detection of cancer biomarkers that occur in a wide concentration range including extremely low levels, which are typical for the early stage of the disease, are discussed. Furthermore, “Tyrosinase electrochemical biosensors monitoring medicinally significant substances” topic is well discussed by the authors Milan Sýs and Karel Vyfras. In this review overview of applications of electrochemical tyrosinase biosensors in the analysis of medicinally significant substances, otherwise also known as biomarkers are shared. In the review entitled “In-vitro Drug Dissolution Studies in Medicinal Compounds”, the topic is well discussed by Bozal-Palabiyik et al. This review paper aims to analyze in-vitro drug dissolution testing in solid dosage forms since 2010 in order to present a comprehensive outlook of recent trends. Another interesting study entitled as “Advanced methods for analysis of testosterone suggested by Livia Alexandra Gugoasa and Raluca-Ioana Stefan-van Staden. This review is dedicated to surveying recent determination methods of testosterone from different biological samples such as: serum, saliva, plasma, urine or fingernail samples. Besides, Jean-Michel Kauffmann et al., contributed to this thematic issue with a fascinating review paper entitled “Electrochemical Detectors in Liquid Chromatography: Recent Trends in Pharmaceutical and Biomedical Analysis”. The authors review the selected data in the literature devoted to pharmacologically active compounds in their dosage forms, herbal drugs in natural products, drug residues in feed and/or in biological samples. Ana-Maria Chiorcea-Paquim, Teodor Adrian Encache, and Ana Maria Oliveira-Brett, contributed a review paper entitled “Electrochemistry of Alzheimer disease amyloid beta peptides”. The recent advances on the Aβ peptides electrochemical characterization are reported in this review. In another contribution, “The role of oxidative stress modulators in breast cancer” is discussed by Gurer-Orhan et al. The authors focuses more on melatonin which we have been working on during the last decade. Since a large spectrum of electrochemical MIP-sensors has been described in the literature for the whole arsenal of drugs, e.g. the most frequently used analgesics, antibiotics and anticancer drugs, “Yarman et al., stated the recent studies on “Electrochemical MIP-Sensors for Drugs”. Meanwhile the studies of the interactions of DNA with small molecular drugs, especially anti-tumor agents, antibiotics and drugs of abuse are currently being performed to explore their mechanism of action and develop new drugs with lower side effects and high curative properties, Campuzano et al., contributed.
their interesting review paper “Electrochemical Nucleic Acid-Based Biosensing of Drugs of Abuse and Pharmaceuticals”. In the review by Hosu et al. “Electrochemical Immunosensors for Disease Detection and Diagnosis” topic was discussed. The authors report the research progresses of electrochemical immunosensors applied in clinical analysis that have been published in the last years. Smarzewska et al., also contributed the review paper entitled “Recent Applications of Silver Amalgam Electrodes for Analysis of Pharmaceuticals and Vitamins”. The features and applications of silver amalgam electrodes in electroanalysis of pharmaceuticals and vitamins are summarized in this review. The state-of-art in the preparation and construction of solid silver amalgam electrodes for prolonged and user-friendly use is presented. And finally, Gumustas et al., shared a short summary of the basic principles of chiral separations on an analytical and preparative scale, with the review paper entitled “Analytical and preparative scale separation of enantiomers of chiral drugs by chromatography and related methods”. In addition, some selected applications for analytical techniques, such as gas chromatography, supercritical fluid chromatography, high performance liquid chromatography, capillary electrophoresis and capillary electrochromatography for the separation of enantiomers of chiral pharmaceuticals published in last two years are also discussed.

We tried to combine all different kinds of analyzing methods to maintenance the richness of analytical chemistry. Therefore, this thematic issue entitled “Advances in Medicinal Chemistry from Analytical Perspectives” will be very useful for the readers who want to have broad knowledge.

I believe that you, as the valuable readers of Current Medicinal Chemistry journal, will find out new information, topic of interest and new ideas in this thematic issue and I hope that this thematic issue will encourage researchers to achieve the analysis of pharmaceutical active compounds using different kinds of methods.

I would like to thank to all of the authors for their excellent contributions, and Prof. Dr. Atta-ur-Rahman, the Editor-in-Chief of “Current Medicinal Chemistry”, his kind invitation to act as a guest editor for this thematic issue.

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