Editorial

Nanoparticle Carriers in Medicinal Chemistry and Pharmaceutical Sciences

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The development of nanoparticles as carrier systems for applications in medicinal chemistry and pharmaceutical sciences is a topic of research that has shown much effort in solving problems related to the diseases treatment [1,2]. In recent decades, many studies have been developed to offer potential treatments for a wide range of diseases and conditions through the use of new materials [3]. In this volume, Current Topics in Medicinal Chemistry (CTMC), we focus on the review articles with the potential and perspectives for use of nanoparticles in medicinal chemistry and pharmaceutical sciences through different routes of administration (oral, ocular, topic, nasal, mucosal, intravenous) for various diseases such as cancer, mental disorders, etc. In particular, this issue highlights the contributions that were made by experts from different parts of the world, where ten review articles were selected dealing with many different themes and illustrations that contribute to understanding the state of the art of nanoparticle carriers in Medicinal Chemistry and Pharmaceutical Sciences.

Below we will present the 10 selected articles with a brief account of the contribution of each:

- *Nanoparticles in the treatment of mental disorders: A new tool in the psychiatric medication* by Sobarzo-Sánchez *et al.* - In this review article, the authors showed development in nanotechnology area applied for the treatment of mental disorders and how nanoparticles can extend/troubleshoot the drugs bioavaliability and to contribute for the development of less toxic carrier systems.

- *Recent advances in nanoparticle carriers for coordination complexes* by Sato *et al.* - In this article, aspects of coordination compounds and their applications in different areas were addressed. However, due to problems of solubility and low bioavailability of these compounds, the use of nanoparticle is pointed out as a strategy to provide coordination compounds applications in the field of medicinal chemistry and pharmacy.

- *Nitric Oxide Releasing Nanomaterials for Cancer Treatment: Current Status and Perspectives* by Seabra *et al.* - In this paper were issued the advances in the use of different nanomaterials as carriers for nitric oxide aiming at applications in the treatment of cancer. In this review different strategies for targeting of nanoparticles for the treatment of tumor cells were presented.

- *Graphene oxide: A carrier for pharmaceuticals and a scaffold for cell interactions* by Duran *et al.* In this work, the authors highlight the characteristics of graphene oxide and its ability to interact with biomolecules and cells, introducing prospects to the use of these systems as drug carrier systems and their potential applications in medicine, as well as aspects related to nanomedicine and toxicology of these materials.

- *Soft Matter Assemblies as Nanomedicine Platforms for Cancer Chemotherapy: a Journey from Market Products towards Novel Approaches* by Jäger and Giacomelli - The authors of this review paper presented the development of new systems to the solution of remaining problems in the area of cancer chemotherapy, in special related to biological barriers, as well as the journey from market products and clinical trials.

- *Highlights in peptide nanoparticle carriers intended to oral diseases* by Benergossi *et al.* - In this article, the authors presented various aspects of the development of nanostructured carrier systems for targeting peptides for oral diseases, as well as the advantages of using these systems in protecting peptides from biological degradation.

- *Opportunities and Challenges for the Nasal Administration of Nanoemulsions* by Comfort *et al.* - The focus of this review was to present release nasal administration systems using nanoemulsions. The authors presented the state of art in this topic, as well as the challenges related to the pharmaceutical composition, stability, as well as for increase the absorption and bioavailability of drugs.

- *Therapeutics and carriers: the dual role of proteins in nanoparticle for ocular delivery* by Pescina *et al.* - In this article, aspects of the use of nanoparticles in special for peptides and proteins for the treatment of ocular diseases have been addressed. The use of nanoencapsulation technique has been shown to be interesting for proteins to be transported across ocular barriers such as the cornea or the blood-retinal barrier.

- *Pulmonary drug delivery: a role for polymeric nanoparticles?* by d'Angelo *et al.* - The authors of this review present state of the art in the development of polymeric nanoparticles for use as pulmonary drug delivery systems, as well as the challenges in the development of biocompatible inhalable polymeric systems based on natural enzymatically-degradable polymers and biodegradable polyesters, as well as the models that are used to evaluate the toxicological aspects of these systems.

- *Opportunities offered by chitosan-based nanotechnology in mucosal/skin drug delivery* by Sandri *et al.* – In this article, the authors presented applications for the chitosan use for releasing active molecules to the mucosa and skin, as well as the strategies to use these materials for various clinical applications.

In the context of this special issue, we would like to thank all authors of the chapters listed above and for their important contribution to this issue of Current Topics in Medicinal Chemistry. We believe that this volume will contribute to the literature in order to auxiliary scientists in their research in different fields related to the topic Nanoparticle Carriers in Medicinal Chemistry and Pharmaceutical Sciences.

CONFLICT OF INTEREST

The authors declare that there are no conflict of interests in this editorial.

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