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Editorial Open Access

Therapeutics Delivery: Innovations Technology Approaches

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Editorial

Over the past decades, the topic "drug delivery" has been the driving force of pharmaceutical companies that comprises a high competitive and fast developing of novel technological approaches and intelligent and noninvasive delivery systems to treat unmet medical requirements. These strategies aim to overtake the challenging barriers increasing the clinical success of therapeutic products considering the rigorous demands of regulatory protocols. The novel drug delivery system potentially optimize dosage, enhancing the therapeutic agent performance and minimizing the systemic side effects are applied in already commercial drugs (i.e. conventional drugs), based on their economic beneficial, as well as in new classes of pharmaceuticals and biopharmaceuticals (i.e. peptides, proteins, nucleic acids and cell based products) [1-3].

In this area, pharmaceutical technology has been revolutionized from the macro to the micro level and presently at the molecular level (i.e. nano scale) in order to address different difficulties and to achieve more efficient pharmacological treatments. A significant number of research teams around the world center their attention in nanotechnology, which is supposed to offer promising platforms for advanced therapeutic approaches. Studies based on drug delivery with nanosystems (e.g. inorganic nanoparticles, metallic nanoparticles, mesoporous silica systems, lipid-based colloids systems, polymeric nanoparticles, dendrimers, nanocrystals, carbon nanotubes) are increasing each day and are applied to every route of administration (i.e. from oral to injectable) and several pathological conditions (e.g. cancer, rheumatoid arthritis, infectious diseases, metabolic and neurodegenerative disorders).

Although several papers reported the great potential of nanosystems in drug delivery, such as, more specific drug targeting, reducing the side effects, improving bioavailability, protecting drug stability; few of these products are in the pharmaceutical market probably due to the complex regulatory issues concerning efficacy, toxicity and quality, lack of studies in human, *in vivo* instability, complexity in lab-scale processes and long-term instability. In addition, the requirements of nanosystems are different depending on the route of administration (e.g. sterility and cytotoxicity). However, a significant number of clinical trials are already being conducted and some formulations appear to fulfill the essential prerequisite [4].

I agree with the opinion of other researchers, when they refer that the area of nanotechnology is still growing. However, the nanosystems in drug delivery should be studied in other level than the development and optimization perspectives. At this moment, it is crucial to apply strategic methods to clarify and follow the fate of the nanosystems in the body so that we can completely understand their specific behavior and achieve optimum *in vivo* therapeutic efficacy and safety [5,6]. Therefore, more preclinical and clinical studies are essential to understand also their toxicity parameters.

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