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Commentary

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Applications of nano medicine in drug delivery system

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Description

Components in the nanoscale range are used as diagnostic instruments or to transmit therapeutic compounds to particular target regions in a controlled manner in nanomedicine and nano delivery systems which is a relatively young but fast emerging discipline. By delivering precise medications to specified locations and targets, nanoscale has many advantages in the treatment of chronic human diseases [1]. The use of nanomedicine (including chemotherapeutic medicines, biological agents, cancer immunotherapy agents, etc.) in the treatment of many diseases has recently seen a number of notable applications. Through careful examination of the discovery and use of nanostructures in improving the efficacy of both new and old drugs (such as natural products) and specific diagnosis through illnesses genomic molecules the systematic process provides an updated overview of recent developments in the field of nanoparticles and nano based drug delivery systems [2]. The advantages and disadvantages of using nanomedicines for the clinical delivery of drugs from synthetic or natural sources are also covered. Additionally, we have included details on the developments and outlooks for the field of nanomedicine [3]. In term of the use of nanomaterials in medicinal chemistry an effective cure for disease involves the creation of an improved diagnosis an optimized drug loaded formulation, and the integration of the prepared formulations into an appropriate delivery system. Increasing analytical capability with better data quality, using less sample volume for storage, and molecular level evaluation of cellular and molecular libraries has been a difficult problem for researchers. Currently, the novel application of nanotechnology allows for technological growth, overcoming the initial difficulties of incorrect data, high sample consumption, and several other problems.

Because of various competing alternative medical markets, pharmaceutical industries are constantly challenged to find improved drug discovery technologies. For the efficient treatment of a wide range of ailments, this industry needs to find and develop new medications. In order to find novel medications, pharmaceutical companies are increasingly focusing on standard procedures like replicating and generating human receptors and proteins [4]. These procedures enable high productivity, automated screening and the use of combinatorial technologies. As a result of the genomes and proteomics revolution, the drug discovery business should currently have enormous volumes of data regarding the molecular components of life.

By using nanomaterials and nanophases in a variety of scientific domains, including nanomedicine and nano-based therapeutics where such particles are of particular relevance, nanotechnology has been proven to bridge the gap between natural science. Nanomaterials which can be described as substances with diameters ranging from 1 nm to 100 nm, have a significant impact on the boundaries of nanomedicine, influencing everything from biosensors, drug delivery, and tissue engineering. To create nanoparticles, nanotechnology uses therapeutic molecules at the nanoscale level. Nanoparticles have been the driving force behind the development of nanobiotechnology, drug delivery, biosensors, and tissue engineering in the biomedical field. Nanoparticles are often small nanospheres because they are made of materials that are designed at the atomic or molecular level. As a result, they can travel within the human body with greater freedom than bulkier materials. The structural, chemical, me-

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chanical, magnetic, electrical and biological characteristics of nanoscale-sized particles are distinctive. Because nanostructures can be used as delivery agents to enclose medications or bind therapeutic substances and deliver them to target tissues more accurately with a controlled release, nanoparticles have gained popularity recently [5]. A developing subject called nanomedicine applies nanoscience knowledge and methods to medical biology, preventing disease and treatment. It suggests the use of nanodimensional materials such as nanorobots, nanotechnology for delivery, diagnostics, and sensory functions, as well as actuating materials in living cells. Nanoparticles like gold or nanomaterials may be present in these liposomes and micelles. These characteristics have led to a rise in the usage of nanomaterials, particularly for therapeutic, imaging, and drug delivery purposes. Additionally, according to reports nanostructures improve the transport of water-soluble medications to their intended place and prevent drugs from the gastrointestinal area. Due to their usual absorptive endocytotic uptake methods, nanodrugs have a higher oral bioavailability.

One of several areas of healthcare that nanotechnology is now advancing is drug discovery. Drug transport *in vitro* diagnostics, *in vivo* imaging, therapeutic methods, nanomaterials and biomedical engineering are just a few of the present and potential applications of nanomedicine. While some of these prospects are already becoming reality or actively being exploited others are showing promise as they develop and are predicted to increase rapidly in the near future.

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