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Advance applications of nanotechnology

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DESCRIPTION

Nanotechnology offers new materials and applications that will benefit for society, yet there is rising concern about the possible health and ecological influences of production and use of nanoscale products. Although lots of studies of nanomaterial threats have been reported, due to the complexity of the nanomaterials, there is no consensus about the impact these hazards will have.

This emphasis defines the necessity for a research program that addresses these nanomaterial complexities through coordinated research on the applications and implications of new resources. Greener nanoscience is presented as a method to determining and implementing the design rules for safer nanomaterials and safer, more efficient processes.

During the past decade, there has been fast progression in nanotechnology research and the establishment of companies and products by the early adopters of this technology. This phase has been nanotechnology's discovery phase, in which researchers have truly focused efforts on determining new properties, changes of matter, devices, and applications. The amounts of material used in this phase are small; thus, the primary concern is the safety of the researcher or others who handle the material directly. Discovery phase applications are minor scale or initial stage research where there is less concern about potential process-related hazards and production efficiency.

The efficiency of transformations and the use of hazardous reagents are of less concern because, when one needs only a few milligrams of material to study, the amounts of waste generated are not overwhelming.

As nanotechnology develops, questions are being raised about whether the products or materials of nanotechnology will present hazards to human health or the environment and whether the manufacture of these materials will generate new hazards or waste streams. The point has been made that if the promise of nanotechnology lies in the new properties of nanoscale materials, then it is likely that new size-dependent hazards will also be found. Although research funds under the 21st Century Nanotechnology Research and Development Act providing a focus on and some early funding to address "moral, legal, ecological and other suitable societal concerns", very few data on these hazards exist, and some of what is available is contradictory.

The action of herbal medicines depends on the complete function of lively components, as all the constituents offer synergistic action and, thus, improve the therapeutic value. Each active constituent is connected to each other and they all show significant roles. On the other hand, the insoluble character of most of the drugs of herbal origin leads to lower bioavailability and, because of this, systemic clearance is increased and frequent management or an advanced dose is required all of which renders the drug a low-class drug for therapeutic use.

In phytoformulation research, developing nanotechnology-based dosage forms, e.g., Solid Lipid Nanoparticles (SLNs), polymeric nanoparticles (nanospheres and nanocapsules), proliposomes, liposomes, nanoemulsions, etc., has an excessive number of advantages for herbal drugs. These include enhancement of solubility and bioavailability, improvement of stability, suppression of toxicity, improvement of pharmacological activity, sustained delivery, improving tissue macrophage circulation, and defence against physical and chemical degradation.

CONCLUSION

Therefore, problems associated with plant medicines can be overcome with Nano-sized Drug Delivery Systems (NDDS) of herbal drugs, having a potential future for enhancing their activity. Hence, including nanocarriers as an NDDS in conventional Medicines 2019, 6, 39, 3 of 10 medicine systems would be necessary to combat more chronic diseases like diabetes, cancer, asthma, and others, with the aid of herbal drugs.