A Review Paper on Role of Nanobiotechnology in Drug Discovery

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ABSTRACT: ***In a variety of areas of the field of life science and biotechnology, nano-biotechnology has already tested its magnitude. It is no longer hyperbole to suggest that the nano-scale approach will potentially carry the relevant science sector to the next stage in the future. There are technological challenges, because, despite the fact that scientists give their greatness to solve such problems. This chapter has already explored the applications of nanobiotechnology. Innovative improvements to such applications are really correlated with future prospects. This technology, despite some impedance, offers giant hope for the future. In various kinds of biomedical applications, such as drug shipping, gene therapy, biosensors, biomarkers and molecular imaging, it plays the most important role. Moreover, it leads to advances in this area. Innovation of the early analysis method and cure with target-specific remedy therapy will be the fundamental research goal of this discipline. While there may be some safety issues regarding the in vivo use of nanoparticles, research is in the region to determine the type and degree of adverse effects.***

KEYWORDS: ***Molecular, Nanobiotechnology, Nano, Research, Science.***

INTRODUCTION

The enhancement of the diagnostic process, the development of optimized drug loaded formulation and the integration of optimized formulation into the appropriate delivery system in terms of the role of nanotechnology in drug discovery and development require effective treatment for disease. Researchers have been challenged to increase analytical capability with enhanced data quality, consuming less sample volume for cell and tissue library storage and screening at the molecular level. The revolutionary format of nanotechnology provides technological advancement in the current scenario, overcoming the initial challenges of inaccurate results, consuming high samples and various other problems[1].

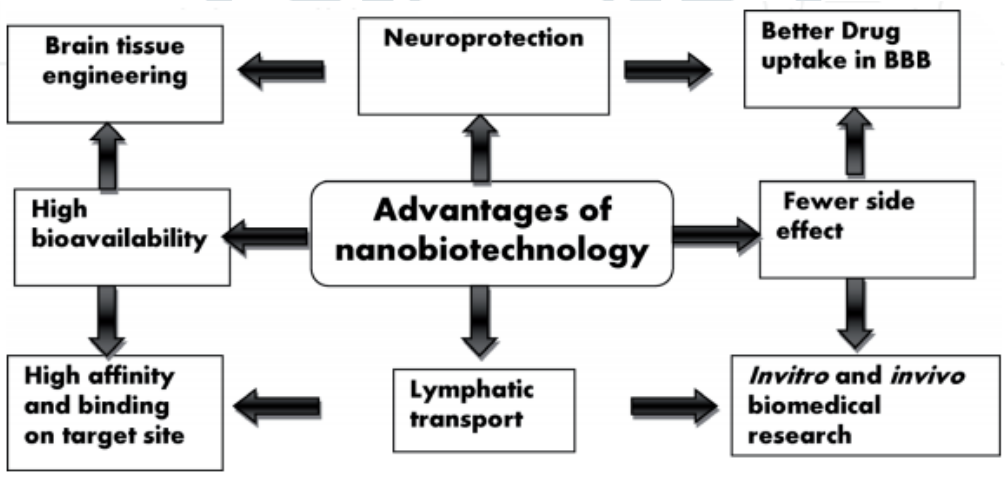

Figure 1: Illustrates the advantages of the nanobiotechnology[2].

DISCUSSION

If we consider the two main capabilities of nanobiotechnology in trendy terms, first is imaging and diagnostics (quantum dots) and second is proteomics. In particular, nucleic acids and proteins are examined and detected in proteomics[3]. For the treatment of cancer, the Thermal Sensitive drug delivery system has now been created.

In this, the drug is given in the injection form, which enters the inside of the body and becomes insoluble and accumulates in the tumor cells since the temperature of the tumor cell is greater than that of the normal cell. Despite the considerable reputation of nanobiotechnology, due to its toxicity and environmental concerns, its use has been significant[4].

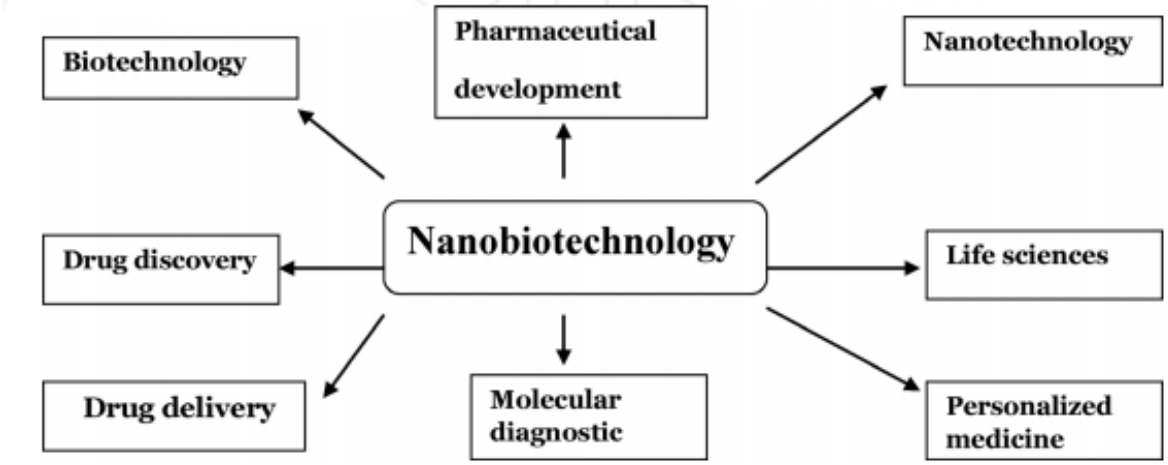

Figure 2: Illustrates the application of nanobiotechnology for molecular diagnosis[2].

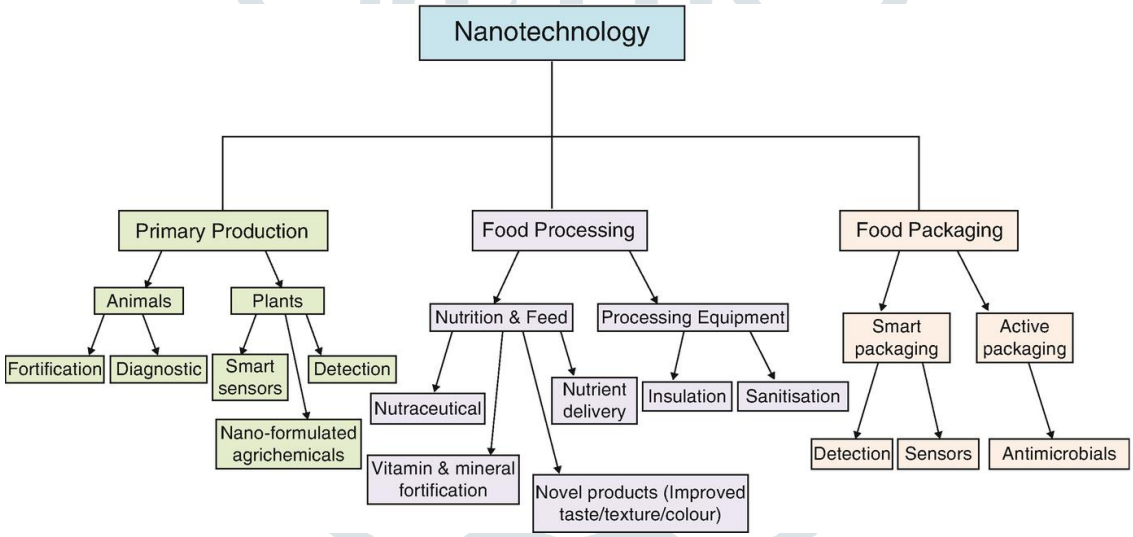

Figure 3: Illustrates the future prospects of the nanotechnology[5].

In spite of all this, the fields of drug delivery, drug discovery, gene therapy, molecular imaging, biomarkers, and biosensors are pursuing nanobiotechnology opportunities. For the clinical diagnosis and targeted drug delivery market, nanobiotechnology has brought a bright future. Now, in the field of diagnosis, it has become easier to easily diagnose diseased cells, which is why it is possible to avoid the spread of diseased cells in the body. Right now, there is continuous progress in this area and it is possible that certain incurable diseases may possibly be cured with the tools of nanobiotechnology in the future.

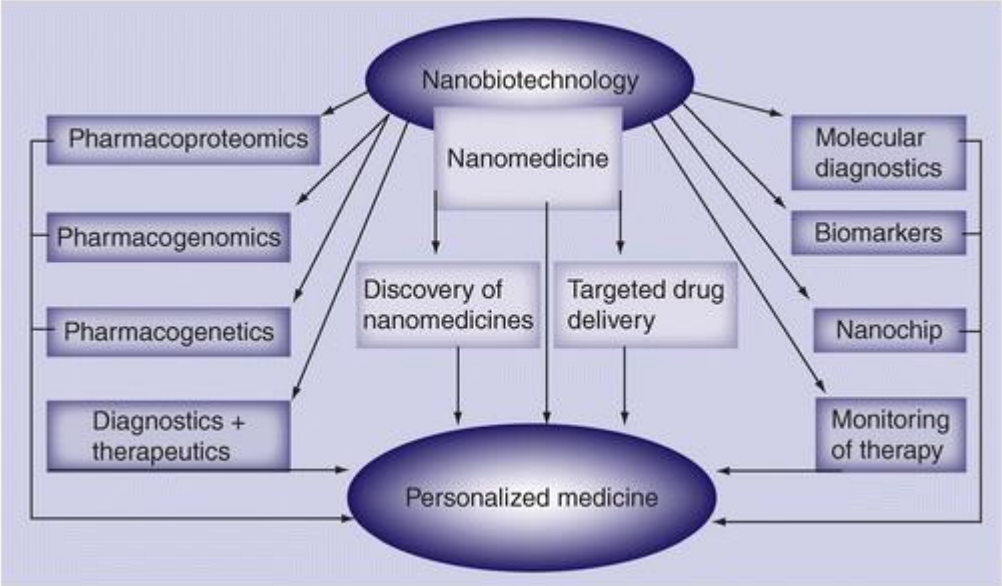

Figure 4: Illustrates the connection of nanobiotechnology and personalized medicine[5]**.**

Both nanomedicine and personalized medicine, while not formally designated as specialties of medicine, are already present on the clinical scene. Both will continue to communicate and develop and will play an important role in shaping medical practice's future. Nanomedicine protection and regulatory issues are being investigated, and personalized medicine's legal as well as economic problems are also being addressed. Not every disease needs nanomedicine or personalized medicine and areas are defined in which these methods are safe and cost-effective. Personalized medicine's ultimate goal is to transform healthcare through the use of emerging technology. Among these, the most important role will be played by nanobiotechnology in combining diagnostics with therapeutics, an integral component of personalized medicine[6].

The fine combination in multidiscipline of science is nano-biotechnology. In the pharmaceutical sector, with the help of this wonderful technology, scientists and researchers are attempting to resolve the demerits of existing drug molecules. Many future benefits are anticipated at the bank. Despite that protection, the main concern with the in-vivo application of nano-engineered medicines is still the main concern[7]. It has been shown that these particles can easily get into the human body and eventually into the blood stream and then into different vital organs when making or using nano medicines; where they exert unintentional adverse effects, these effects are often fetal for the patient[8]. The accumulation of carbon and manganese nano materials in the olfactory bulb has been revealed in an in-vivo analysis of monkeys and rats, causing significant pathological effects for the nervous and respiratory systems. These kinds of irregular pathological disturbances have been seen in many animal studies. Figure 1 illustrates the advantages of the nanobiotechnology. Figure 2 illustrates the application of nanobiotechnology for molecular diagnosis. Figure 3 illustrates the future prospects of the nanotechnology. Figure 4 illustrates the connection of nanobiotechnology and personalized medicine[9].

CONCLUSION

In terms of growth, nano-biotechnology is in its primary stage. Nano-biotechnology is having a broad impact on the fields of science and technology because of continuous creative research and abundant use. In medicine, diagnosis, and biomedical sciences, nano-biotechnology offers several interesting possibilities. The advent of something new has contributed to the innovation of nano-biotechnology in drug delivery systems and, with the help of this, it seems possible to treat certain incurable diseases. Although the potential for nano-biotechnology benefits is high, nano-medicine prospects are not completely established. Regulatory bodies do not, in reality, have adequate guidelines which balance their risk and safety factors. It would be safe to say that nano-biotechnology will play an exceptional and special role in human disease care and the study of human physiology in the future. It can be concluded from the research conducted in nano-biotechnology over the last few years that nano-biotechnology will become an indispensable stage in our everyday lives in the future.

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