A Review Paper on Recent Research on Nanobiotechnology

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ABSTRACT:*In biological fields, nanobiotechnology is the application of nanotechnology. Nanotechnology is a multidisciplinary area that currently recruits techniques, technologies and facilities available in engineering, physics, chemistry and biology in both traditional and advanced avenues. A systematic literature review was carried out on the concepts, constraints, problems, improvements and applications of nanotechnology in the field of medical science. There are many possibilities for nanobiotechnology to advance medical research, thus enhancing health care practises around the world.It is anticipated that several novel nanoparticles and nano devices will be used, with an immense positive effect on human health. Although nanotechnology's true clinical applications are still virtually non-existent, a large number of promising medical ventures are at an advanced experimental level. In medicine and physiology, the application of nanotechnology means that processes and devices are so technically developed that they can communicate with a high degree of precision with sub-cellular (i.e. molecular) levels of the body. Thus, with minimal side effects, therapeutic effectiveness can be achieved to the fullest by means of direct clinical intervention unique to the cell or tissue.*

KEYWORDS:*Applications, Medical, Medicines, Materials, Nanobiotechnology.*

INTRODUCTION

Nanotechnology is a novel scientific method that requires the ability of materials and equipment to modify a substance's physical and chemical properties at molecular levels. On the other hand, in order to control biochemical, genetic and cellular processes for the production of goods and services, biotechnology uses the knowledge and techniques of biology and is used in various fields, from medicine to agriculture[1].

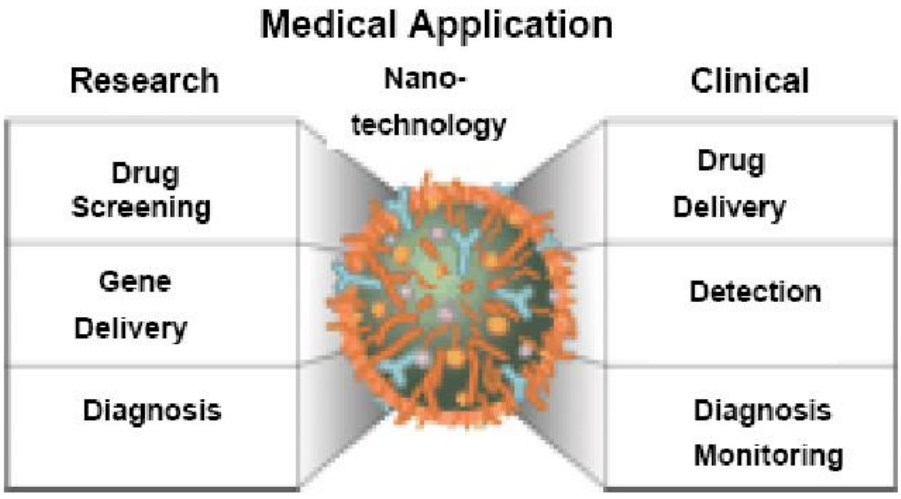

Figure 1: Depicts the applications of nanobiotechnology in medical[2]**.**

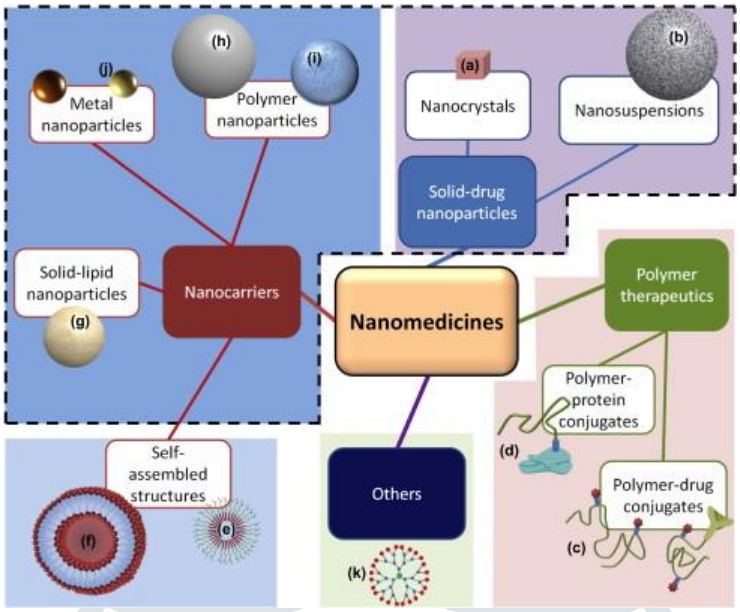

Figure 2: Illustrates the diverse groups and subgroups of nanomedicines for drug delivery[3]**.**

The unusual convergence of biotechnology and nanotechnology by which classical micro-technology can be combined into a real molecular biological approach is known to be nanobiotechnology. Through this technique, atomic or molecular grade machines can be created by imitating or integrating biological systems, or by constructing small tools to analyse or modulate, on a molecular basis, the various properties of a biological system[4].Therefore, by incorporating cutting-edge applications of information technology & nanotechnology into current biological problems, nanobiotechnology will ease many avenues of life sciences. To some degree, this technology has the power to dissolve evident distinctions between biology, physics and chemistry and form our existing ideas and understanding. For this reason, through the extensive use of nanobiotechnology over time, many new problems and directions may also emerge in education, science & diagnostics at the same time[5].

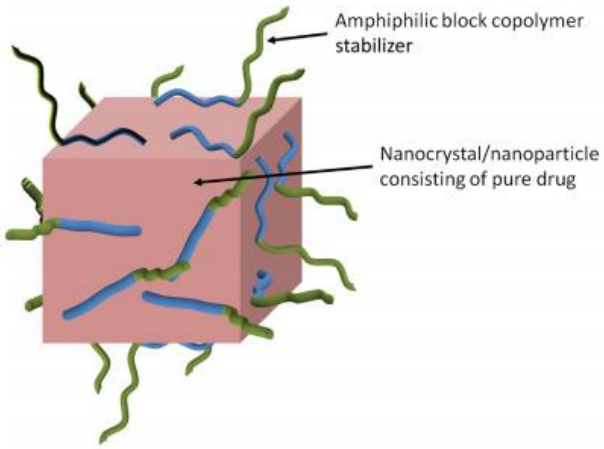

Figure 3: Illustrates the schematic representation of a solid drug nanoparticle[6]**.**

DISCUSSION

Two of the most exciting innovations of the 21st century are biotechnology and nanotechnology. Nanotechnology (sometimes referred to as nanotechnology) is characterised as the design, production and application on a nanometer scale of materials & devices with the least functional composition[7]. Nanotechnology typically deals with the creation of materials, devices or other structures of a size ranging from 1 to 100 nanometers with at least one dimension. Meanwhile, biotechnology deals with biological topics, including microorganisms, metabolic and other physiological processes[8]. In developing and

implementing many useful tools in the study of life, the interaction of these two technologies, i.e. nanobiotechnology, may play a vital role.Nanotechnology is very complex, ranging from extensions of traditional system physics to entirely new methods focused on molecular self-assembly, from the creation of new nanoscale-dimensional materials to the investigation of whether atomic scale/level issues can be managed directly. This definition includes the application of such diverse fields of research as surface science, organic chemistry, molecular biology, semiconductor physics, micro-manufacturing, etc.

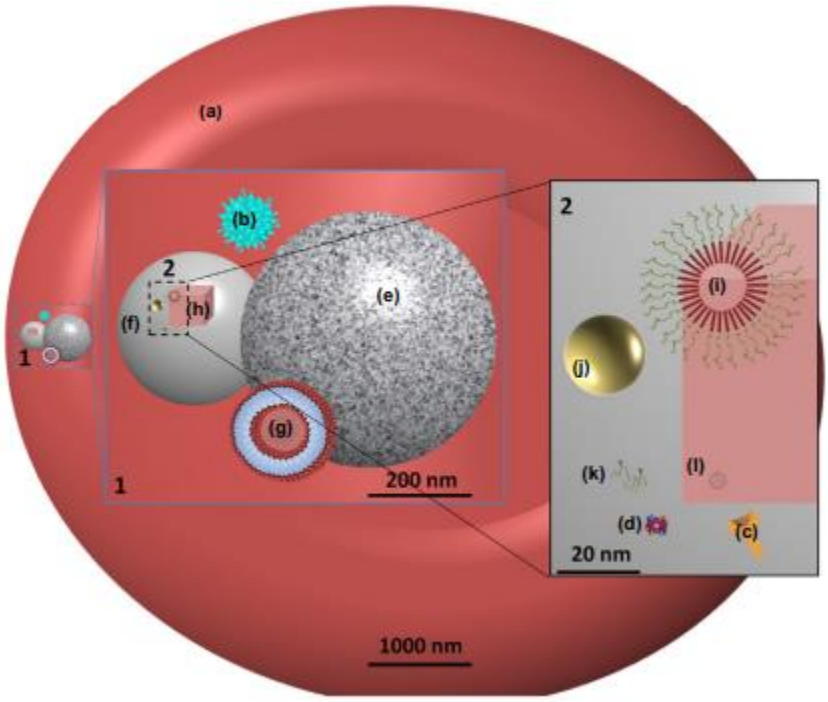

Figure 4: Depicts anarrangement showing the comparative approximate size ranges of nanomaterials used as nanomedicines.

Figure 1 depicts the applications of nanobiotechnology in medical. Figure 2 illustrates the diverse groups and subgroups of nano medicines for drug delivery. Figure 3 illustrates the schematic representation of a solid drug nanoparticle[9]. Figure 4 depicts an arrangement showing the comparative approximate size ranges of nano materials used as nano medicines.Currently, a range of clinical applications of nanobiotechnology are being laboriously studied, such as disease detection, target-specific drug delivery and molecular imaging. Clinical studies are also underway on several new exciting drugs.

CONCLUSION

The early stages of nanobiotechnology are still ongoing. The multidisciplinary area of nanobiotechnology brings nearer and closer to existence the science of the almost incomprehensibly tiny unit. At some point, the implications of these advances will be so massive that nearly all areas of science and technology will possibly be affected. In medicine, nanobiotechnology provides a wide variety of applications. Innovations such as methods for the delivery of drugs are just the beginning of something new. In the future, many diseases that have no treatments today will be cured by nanotechnology. Although the aspirations of nanobiotechnology in medicine are high and the potential benefits are continuously recognised, the protection of nanomedicine has not yet been fully established. The use of nanotechnology in medical therapeutics requires that its risk and safety factors be properly assessed. Scientists who reject the use of nanotechnology nevertheless accept that development in nanotechnology should continue because it offers tremendous benefits in this area, but tests should be carried out to ensure people's protection.Nanomedicine can play a crucial/unparalleled role in the future in the treatment of human diseases and also in the improvement of normal human physiology. Nanobiotechnology will one day become an unavoidable part of our daily life if everything runs smoothly, which will help save many lives.

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