Commentary

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Nanotechnology in Medicine

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Nano medicine is a relatively new scientific and technological field. Often it looks ill-defined and perceptions of that term can differ, especially between Europe and the United States. Therefore, nanotechnology opens up a large area of study and application by communicating with biological molecules at the Nano scale. It is possible to understand interactions between artificial molecular assemblies or Nano devices and biomolecules in the extracellular medium as well as inside human cells. Nano scale operation makes it possible to take advantage of physical properties, such as the volume/surface ratio, different from those found on a micro scale. The diagnostic applications studied can be considered both for in vitro and in vivo diagnosis. In vitro, synthesized particles and devices for manipulation or detection allow biomolecules to be identified, captured and concentrated. The synthetic molecular assemblies are developed primarily in vivo as a contrast agent for imaging. Nano drugs, where nanoparticles are engineered for targeted drug delivery, are a second field with strong growth. The use of such carriers increases the bio distribution of the drug, targeting diseased tissues with active molecules while protecting healthy tissue. Regenerative medicine is a third field of application in which nanotechnology facilitates the production of biocompatible materials that promote the growth of cells used in cell therapy. The application of nanotechnology to medicine poses new problems because, for example, of new uses they allow is the medical profession capable of handling the strength of these new diagnostics? What does it mean, without any clinical signs, to treat a patient? Nano medicine may contribute to the development of both diagnostic and therapeutic personalized medicine. Current regulatory mechanisms covering the basic rules of protection and effectiveness of nanotechnology-based medicine exist in many countries, If it's molecular assemblies or surgical instruments. However, these regulations that mobilize many experts need to be explained or updated. France is a country where, as in Germany, the United Kingdom or Spain, the medical advancement of nanotechnology is critical with regard to the European Union.