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Application of Nanoparticles in Cancer Therapy and Diagnosis

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Message from the Guest Editors

Several studies have demonstrated that the trapping of anticancer medications in submicronic colloidal systems, such as nanoparticles, can help to regulate both the tissue and cell distribution characteristics of these treatments. Additionally, nanoparticles are useful for the targeted delivery of oligonucleotides to tumour cells. Furthermore, several types of nanoparticles have shown an intriguing ability to overcome MDR resistance. Polymeric nanoparticles, liposomes, dendrimers, nano-shells, carbon nanotubes, superparamagnetic nanoparticles, and nucleic acid-based nanoparticles are examples of current nanotechnology platforms used for anticancer drug delivery. Recently, nanotechnologies are also being used in combination therapeutic strategies, such as ultrasound, hyperthermia, or photodynamic therapy. Decorating nanoparticles with a molecular ligand for the 'active' targeting of cancerous cells is considered as the next step in developing better cancer targeting strategies using nanoparticles. Applying nanoparticles in imaging for cancer diagnosis could lead to early detection and, consequently, improved cancer management.



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