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(Poster)

**Role of Superparamagnetic Iron Oxide (SPIO) Nanoparticles in MR Imaging**

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Nanotechnology is a scientific movement that has the potential to transform the diagnosis and treatment of disease in the 21st century. It offers many opportunities for enhanced diagnostic and therapeutic medicine against cancer and other diseases.

Already, the special properties that result from the nanoscale size of quantum dots, metal colloids, superparamagnetic iron oxide (SPIO), and carbon-based nanostructures are reviewed and interpreted against a background of the structural and electronic detail that gives rise to their nanotechnologic behavior. The detection and treatment of cancer is emphasized, with special attention paid to the biologic targeting of the disease. The future of nanotechnology in cancer research and clinical practice is projected to focus on 'theranostic' nanoparticles that are both diagnostic and therapeutic by design. Superparamagnetic iron oxide (SPIO) nanoparticles are unique MR contrast agents and have a higher diagnostic accuracy for detecting metastatic lymph nodes than conventional MR studies.

This review presents the impact of superparamagnetic iron oxide (SPIO) for detecting metastatic lymph nodes and also physiologic properties of SPIO, technical considerations and other potential applications of SPIO agents.

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