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46° Congresso SIRM - Abstract inserito correttamente

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Il numero di riferimento per questo abstract è 341

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Titolo	Gadolinium-chelating nanogels as MR contrast agents specifically targeting tumor cells
Tipo di presentazione	ePoster scientifico
Settore scientifico	Mezzi di Contrasto
Primo Coautore	Clelia,Dispensa
Secondo Coautore	Maria Antonietta,Sabatino

Terzo Coautore	Alessia,Ajovalasit
Quarto Coautore	Mats,Jonsson
Ente, dipartimento, indirizzo, città	Università degli Studi di Palermo
Tipo di studio	multicentrico
Tipo di studio	sperimentale
Tipo di studio	prospettico
Scopo	Development of multifunctional nanogels coordinating paramagnetic ions and displacing targeting ligands for preferential accumulation into tumors.
Materiali e metodi	Low molecular-weight Gd-chelates are widely used in clinical MRI for various purposes. However, these contrast agents (CAs) have several shortcomings: they rapidly extravasate from blood vessels to the interstitial space, have a short circulation times and show poor contrast at high magnetic fields. Incorporating gadolinium into flexible nanogels has the potential of increasing intravascular half-life, accumulation and retention in specific body compartments of the CA as well as increasing the MR signal, since many metal ions can be coordinated to the same nanoparticle.
Risultati	Biocompatible, “as born” sterile nanogels have been produced with high yields and through-puts by pulsed e-beam irradiation of aqueous solutions of poly(N-vinyl pyrrolidone) and acrylates, using industrial accelerators. The nanogels have been fully characterized for their structural and physico-chemical properties and decorated with peptides or antibodies. Diethylenetriamine pentaacetic (DTPA) chelating moieties have been covalently bound to the nanogels.
Conclusioni	The produced nanogels have controlled size in the nanoscale range (from 20 to 100 nm), good colloidal stability in physiological conditions and a large number of accessible reactive groups for multiple attachment of targeting agents and/or bio-active compounds for therapeutic purposes. Formation of stable Gd3+ complexes is demonstrated. These nanogels are being further engineered towards multi-modality imaging nanodevices, by conjugation on the same nanoparticle of fluorescent dyes and chelates for multivalent paramagnetic and/or radioactive metal ions.
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