Medical Nanoparticles: Principles of Design

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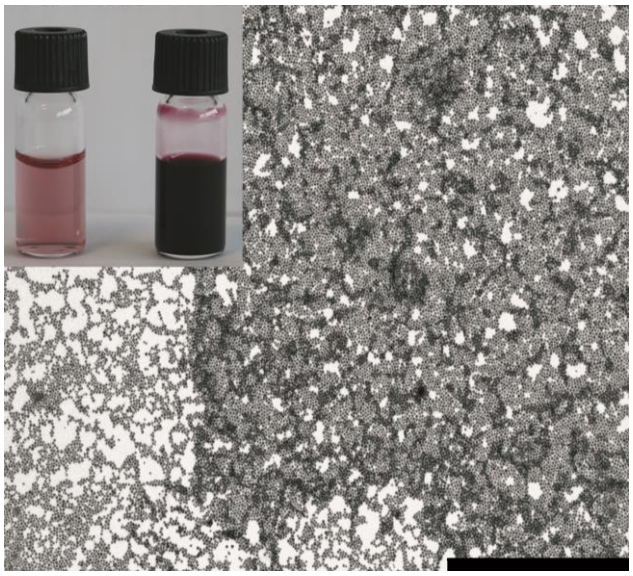
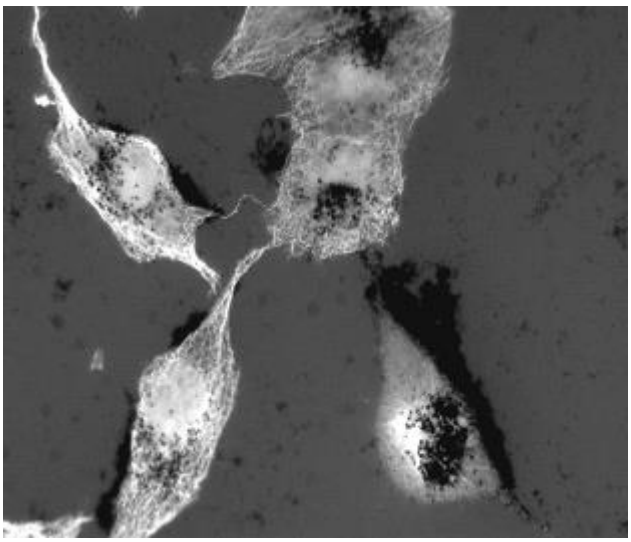
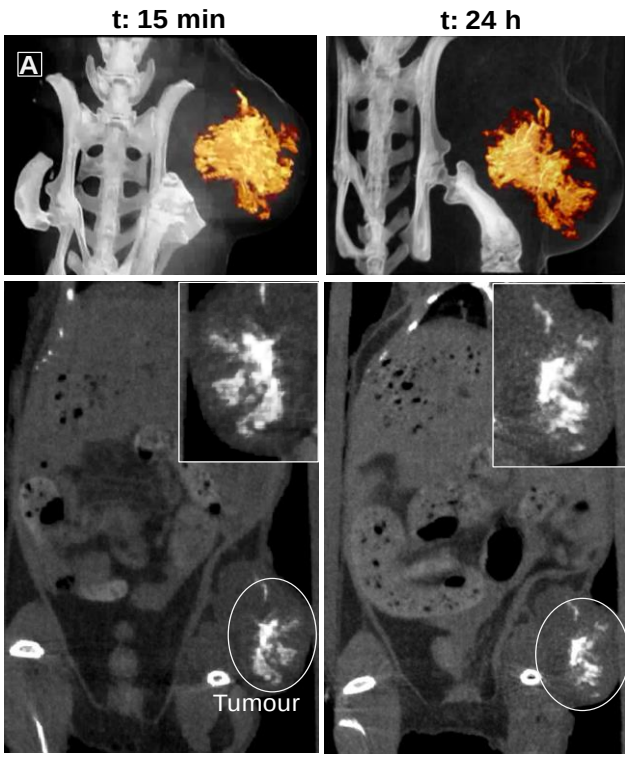
From last two decades of intense research at the nanobiointerface a series of conclusions can be drawn with respect a general set of rules for inorganic nanoparticle design for medical applications. This includes, not only purity, sterility and monodispersity but also feasibility and traceability, metabolization and excretion. In this context, safety is paramount and efficacy has to be developed in a context of a real pressing and precise medical need. Safety is mandatory not only in the development of medical tecyhno9logies but indeed any new technology has to be introduced safely, nanoparticles also. Finally, therapeutic doses has to be achieved, that may be high for colloidal NP stability (always at ease at low concentrations). Similarly, when thinking on dosing, persistency of NPs and potential accumulation has to be carefully controlled to avoid long term damage. This implies to develop a full nanoADME (administration, distribution, metabolization and excretion) model to enable NPs to be used in medicine.







Figures

Figure 1. Concentration of AuNPs to reach theraputical dose of the conjugate.

Figure 2: Dark Field Confocal microscopu pm A549 exposed to AuNP-CisPt for 24 hours

Fig.3. CeO2NPs Tumor enhanced Computer Tomography X-ray images.