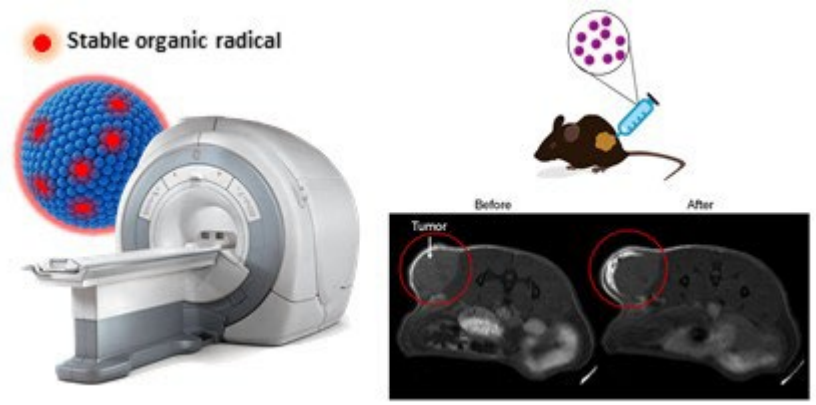
Technology Offer CSIC/GF/001

Nanovesicles as Magnetic resonance Imaging contrast agents



Next-generation metal-free magnetic resonance imaging contrast agents, based on Quatsome-type nanovesicles loaded with organic radicals.

Intellectual Property

Prority patent application filed

Stage of development

Technology validated in the laboratory

Intended Collaboration

Licensing and/or co-development

Contact

Miquel Galindo

Vice-presidency for Innovation and Transfer

knowledge_transfer@icmab.es
comercializacion@csic.es

Market need

Gadolinium-based contrast agents are essential in magnetic resonance imaging (MRI), but they present significant limitations, such as their accumulation in different tissues (brain, liver, etc.) and the risk of causing serious complications in patients with renal impairment.

Moreover, these agents are not suitable for repeated analyses over time, as cumulative exposure increases the risk of retention and toxicity.

A possible alternative is the use of organic radicals, such as nitroxyl radicals; however, these exhibit low relaxivity and are rapidly reduced in the body, thereby losing their paramagnetic activity..

Proposed solution

Quatsome-type nanovesicle platform incorporating stable nitroxyl radicals as MRI contrast agents. These nanovesicles accommodate a high radical payload while maintaining paramagnetic activity, resulting in enhanced MRI contrast efficiency.

The system exhibits high stability, water compatibility, and a highly homogeneous structure, achieved through a simple, reproducible, and environmentally friendly preparation method.

This innovation provides a metal-free contrast agent with great potential for soft tissue imaging and other applications that require high-resolution MRI contrast without the risks associated with gadolinium.

Competitive advantages

- Metal-free alternative to gadolinium-based agents.
- Improved stability and extended lifetime of nitroxyl radicals.
- High radical loading capacity per nanovesicle.
- Simple and reproducible production method.
- Adaptable platform for a wide range of biomedical imaging applications.