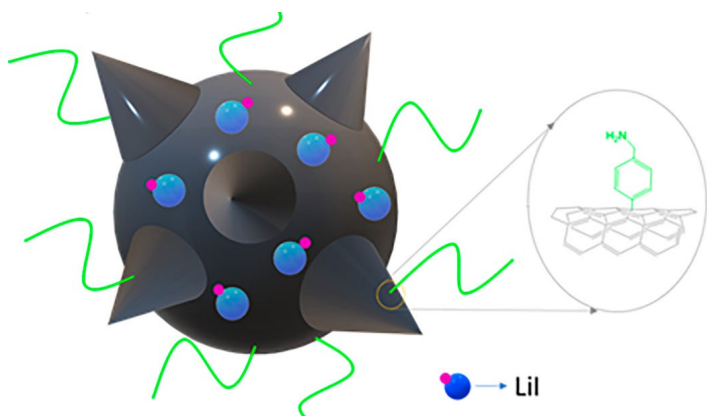


Technology Offer

CSIC/AF/013

Lithium filled nanocapsules for Neutron Capture Therapy (NCT)



New carbon nanocapsules filled with enriched lithium compounds that can be applied in NCT for cancer treatment.

Intellectual Property

PCT patent application filed

Stage of development

Treatment validated in laboratory

Intended Collaboration

Licensing and/or co-development

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Market need

NCT is a form of radiotherapy that exploits the potential of some specific isotopes that capture neutrons and emit short range high energetic particles. The high linear energy (LET) particles are suitable for cancer cell eradication with high precision. Boron-10 (^{10}B) is the mostly used element in NCT. However, critical issues such as biodistribution and low tumour delivery limit the efficiency of the available molecular systems.



Proposed solution

We present an innovative approach, with carbon nanocapsules filled with enriched lithium (^6Li). The encapsulation of ^6Li avoids its interaction with the biological milieu and allows the delivery to the targeted site. The surface of the nanocarrier has been modified for improved biocompatibility.

Neutron irradiation of ^6Li produce nuclear products with high therapeutic potential, which can significantly improve the efficiency of NCT compared with the current state-of-the-art.

Competitive advantages

- Functionalized carbon nanocapsules filled with ^6Li .
- Eradication of cancer cells with high precision.
- Great availability of Li as active pharmaceutical agent.
- Production of particles with high therapeutic potential.