

## TECHNOLOGY OFFER

### Nanoparticles for cancer therapies

#### TECHNOLOGY DESCRIPTION

The Advanced Imaging Unit at CNIC, in collaboration with CIBER and CSIC, has developed new nanoparticles for use in nanomedicine, specifically to be used in the treatment and prevention of cancer.

The invention refers to micelles that contain nanoparticles with an iron-oxide, UCNP or metal core, surrounded by an outer organic layer and coated with glycoside derivatives that have a specific formula. The production process of these micelles is described. The micelles obtained have anticancer activity, in particular against glioma and lung carcinoma.

#### INNOVATIVE ASPECTS

Glycosidic derivatives conjugated with a hydrophobic radical have been described to have antitumor activity against various tumor cell lines. However, these compounds are generally poorly water soluble, making them less suitable as therapeutic agents. Although the solubilization of water-insoluble drugs in systems comprising nanoparticles has been described as prior state of the art, this is dependent on the presence of an amphiphilic polymer.

The invention covers the need to generate a simple system to allow solubilization of the glycoside derivatives with anticancer activity, as they have to provide a micelle comprising nanoparticles and a derived glycoside coating, linked by hydrophobic interactions.

The combination of antitumor drugs and iron-oxide cores will allow “theranostic” (Therapy and Diagnostic) studies to be performed, in which both the treatment of the pathology and the tracking of disease progression can be achieved with a single compound.

#### ADVANTAGES

These nanoparticles will permit:

- Make water insoluble compounds completely soluble in water
- Help these particles maintain or acquire antitumor activity.

The binding to magnetic particles:

- facilitates their accumulation in the tumor area in vivo by applying an external magnetic field
- reduces any potential toxicity and
- permits the use of lower doses.

#### GOAL

Companies interested are sought to develop and commercialize the technology under a patent license.

#### PATENT

European patent filed in 2014.  
PCT/EP2015/055544.

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