PATENT

BIFUNCTIONAL NANOPARTICLE FOR IMMUNOTHERAPY OF CANCER

The Need

To overcome the challenges of immuno-therapy (such as to improve stability, security, efficacy, dose limited by toxicity, and adverse effects caused by the immunological system) as a strategy to stimulate the immune system in order to eliminate cancer cells it is essential to develop technologies based on new approaches.

The Solution

A radical new approach (compared to present immunotherapy strategies and the use of nanoparticles for therapy) to fight cancer by means of connecting T cells with tumour cells in order to eliminate cancer. That is, new bi-specific nanoparticles with particular properties; and binding both, T-cells and tumour cells, simultaneously. This union activates the immunological system to attack the tumour.

Innovative Aspects

Based on a nanoparticle with two faces of different chemical nature

The system can be prepared using any kind of nanoparticle, combining different types of ligands

Simple. Gene or protein engineering are not necessary

Communication between tumour cells and cells of the immune system is reestablished

Therapeutic effect of this communication could be improved by means of encapsulation/delivery of drugs or immunological modulators

Strong antitumour immunological response. Stronger than those caused by present therapies or nanotherapies.

Minor side effects

Easily adaptable to any patient, different types of cell, situation, and development stage, including metastasis, recurrence and possible adquired resistence. Personalisation can be done.

Stage of Development: Preclinical

Intellectual Property

Spanish patent application (Priority date: July 31, 2025)

Suitable for international extension (PCT application)

Available for:

- **Licensing**
- **Further development**

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