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Recombinant ricin nanoparticles design for CXCR4+ cancer cell therapy

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The potent ligand T22, that specifically binds the CXCR4+ receptor, overexpressed in some cancer cells, was engineered to be attached to the N-terminus of the mutated A chain of the plant toxin ricin fused to a 6xHis tag in the C-terminus. The soluble recombinant protein T22mRTAH6 spontaneously self-assembled as protein-only regular nanoparticles of about 12nm in size, capable of CXCR4 dependent cellular internalization and effective cytotoxic effect *in vitro*. Meanwhile, the insoluble version of the protein presented moderate free-protein release inducing to a partial cytotoxic effect in the cells. The T22mRTAH6 nanostructured construct was also tried in mouse models of acute myeloid leukemia, where it proved to reduce dramatically the disease affectation of clinically relevant organs. The functionalized protein nanoparticles are then proposed as suitable prototypes for antitumor carcinogenic therapies based on self-mediated intracellular drug delivery.

Biography

Raquel Díaz is studying her PhD program at Univerity Autonomous of Barcelona .

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