Self-assembled nanoparticles: anticancer natural products as building blocks

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Our continuous interest in the field of chemical approaches to target cancer cells moved us to study the preparation of a novel classes of conjugate compounds using anticancer drugs as building blocks. In previous efforts we used squalene tail as self-assembling inducer[1] and a disulphide containing linker to secure the release of the drugs after cell internalization.[2] Subsequently we demonstrated the possibility to generate hetero and fluorescent nanoparticles by mixing a paclitaxel-squalene conjugate and fluorescein-squalene conjugate.[3] In the light of facing the high demanding issue of resistance[4] we studied the formation of cyclopamine-paclitaxel containing nanoparticles and we detected the internalization by confocal microscopy and super-resolution.[5] More recently we reported doxorubicin-cyclopamine hetero-nanoparticles that are able to reduce tumour growth and to decrease the toxicity of chemotherapy in mice.[6] Our efforts are actually focused on: *a)* new self-assembling inducers,[7] *b)* new combination of drugs to overcome drug resistance,[9] *c)* new hetero-nanoparticles and *d)* new drug-conjugates deriving by modification of active natural products.

References:

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