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Silibinin conjugated graphene and hyaluronic acid platforms for osteosarcoma targeting

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Multifunctional nanoplatforms employed for active and passive tumor targeting represent important devices to overcome some of the critical issues related to the cancer therapy, such as the inherent limitations of drugs to cross anatomical and patho-physiological barriers and to improve the specific drug delivery to tumor tissues. Graphene (G) and its multifunctional derivatives may offer passive targeting toward tumor sites, whereas hyaluronic acid (HA) that counts several specific receptors typically overexpressed on the surface membranes of various tumor cells is the ideal component of multifunctional platforms for active targeting. Herein, we report the conjugation of Silibinin (Sil), the most active component of a complex of flavonoids contained into silymarin employed mainly as hepatoprotective agent but with application that goes beyond liver diseases and expands to cancer, to G-based and HA-based materials. The biocompatibility of new platforms has been evaluated on human mesenchymal stem cells and their anticancer effects have been studied on human osteosarcoma and human breast cancer cell lines.

Biography

Giulia Neri has obtained her Master's degree in Pharmaceutical Chemistry and Technology from the University of Messina in 2013, where she is currently a PhD Student in Chemical Sciences. Her work focuses on the development of new nanobiotheranostic drug-delivery systems based on graphene nanomaterials and hyaluronic acid. Presently she is working at the National Physical Laboratory (London, UK), on the development of peptide based self-assembly systems for drug delivery.

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