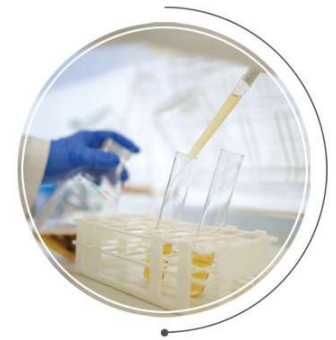




# XIV Annual CICS-UBI Symposium



## Abstract Book



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# XIV Annual CICS-UBI Symposium

## P14. BREAST CANCER TARGETED PHOTOTHERMAL THERAPY MEDIATED BY HYALURONIC ACID FUNCTIONALIZED REDUCED GRAPHENE OXIDE

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### ABSTRACT

The use of graphene-based nanomaterials in cancer photothermal therapy (PTT) is an emerging alternative to the currently available cancer treatments. In this regard, reduced graphene oxide (rGO) has been widely explored for cancer PTT due to its excellent photothermal capacity. However, rGO has some limitations, such as low colloidal stability and water insolubility, as well as absence of targeting capacity towards cancer cells. Herein, rGO produced by an environmentally-friendly method was functionalized with an amphiphilic polymer based on hyaluronic acid (HA-rGO) through hydrophobic-hydrophobic interactions for application in targeted breast cancer PTT. The functionalization improved rGO colloidal stability and cytocompatibility towards normal and breast cancer cells, as well as conferred targeting capacity towards CD44 overexpressing breast cancer cells. In addition, the photothermal effect mediated by HA-rGO upon laser irradiation reduced breast cancer cells' viability. Overall, HA-rGO demonstrated a great potential for being used on-demand and selective treatment of breast cancer cells.

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**Keywords:** Breast Cancer, Near Infrared Light, Photothermal Therapy, Reduced Graphene Oxide.