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1ST ZOOMING INTO PRECLINICAL NANOMEDICINES IN THE ERA OF COVID-19

Conference Abstracts

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Cancer is one of the leading health concerns worldwide. Breast cancer is the most common malignancy and the main cancer-related cause of death among females. According to the GLOBOCAN 2018 report, 2.0 million new cases of breast cancer are estimated to be diagnosed each year, with more than 600,000 deaths. Triple-negative breast cancer (TNBC) is a particular subtype with an aggressively metastatic phenotype. The biological heterogeneity of TNBC and the absence of targeted therapies indicate the necessity of discovering novel molecules for directed approaches. Thus, aptamers arise as an alternative tool to overcome these challenges. Aptamers are single-stranded DNA or RNA oligonucleotides that recognize a specific target with high selectivity and specificity in a similar manner to antigen-antibody interaction. These molecules could be selected in vitro by SELEX technology. The exclusive features of aptamers make them robust tools for improving drug side effects and developing different therapeutical systems, such as aptamer-chimera (aptamer-miRNA, aptamer-siRNA), bispecific aptamers and aptamers-decorated multimodal nano systems (Functionalized-Aptamers). In this project, we aim to select a specific aptamer that recognize triple negative breast cancer cells with high affinity, allowing us to create both a novel and precise therapeutic tool for TNBC patients.

S1-5 Evaluation of murine triple negative breast cancer cell viability exposed to magnetic nanoparticles

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Magnetic nanoparticles (MNPs) represent a tool for localized therapeutics on specific sites of the body by the influence of an external magnetic field. They may act as drug carriers as well as contrast agents for

resonance magnetic images and agents for hyperthermia treatment in different oncological pathologies. In this work, we developed MNPs coated with different agents in order to induce biocompatible platforms for future loading of chemotherapies. Their effects on cell viability of murine triple negative breast cancer cells(TNBC) were studied to provide novel information for possible future clinical applications.MNPs were synthesized by co-precipitation method from iron precursors and different coating agents: citric acid, glutamic acid, adenine, oleicacid, beta-cyclodextrin, and 3-aminopropyltriethoxysilane(APTES). Physicochemical characterization was performed employing FTIR spectroscopy, analysis of hydrodynamic diameter(Dh) and zeta potential, transmission electronic microscopy and iron content. Cell viability of murine 4T1TNBC cells exposed for 24h to different concentrations of MNPs (0-500 µg/ml) was evaluated by cristal violet staining assays. Spectroscopic studies demonstrated the successful coating of the MNPs with the coating agents employed. Physicochemical properties were proper for biomedical applications in terms of Dh (between 200 and 350 nm) and stability physiological media pH near 7 (PDI <0.5). No differences were found on TNBC cell viability between nano-formulations or control cells at any of the concentrations tested. The MNPs studied did not alter viability of murine TNBC cells and may be used as platform for loading of different drugs intended to improve breast cancer current therapies.

S 1-6 Hybrid magnetic nanoplatforms with *L*-cysteine and hyaluronic acid for controlled tamoxifen delivery in breast cancer therapy

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