(TPP:PQ) into the ligand domain close to FAD and Glu312. Due to the inhibitor's strategic position into the catalytic pocket, a model of electron-capture is proposed, where the herbicide disturbs the redox process NADP+ ⇌ NADPH by capturing electrons to reduce itself.
CONCLUSION
Our findings provide important insights into changes induced on targeted action mechanisms may play a key role in its increased herbicidal efficiency. Thus, our findings contribute to a better understanding of the mode of action of herbicides encapsulated in polymeric nanoparticles.
Keywords: Nano-enabled agrochemicals, Enzymes, Photosynthetic electron transport
Supported by: CAPES

08593 - Poster Session

EB.14 - Red LED irradiation impacts the cytotoxic response of murine breast cancer cells to ionizing radiation
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INTRODUCTION
Breast cancer is a disease of worldwide importance since it is considered the 5th leading cause of cancer deaths. Triple-negative breast cancer (TNBC) is a molecular subtype that presents resistance to conventional radiotherapy, demanding high doses of ionizing radiation (IR) for a prolonged period of treatment. On the other hand, low-level light irradiation (LLLI) has been studied to sensitize cells before IR exposure. However, the literature is poor regarding the association of both techniques in TNBC cells.
OBJECTIVES
Thus, we aimed to assess the effect of LLLI before IR exposure on two TNBC cell lineages.
MATERIALS AND METHODS
MDA-MB-231 (human TNBC) and 4T1 (murine TNBC) were cultivated, seeded at a density of 2.5 x 10^5 cells/cm², and maintained in an incubator (37ºC, 5% of CO_2) overnight. LLLI was performed with a red LED (λ= 660 ± 11 nm, 38.2 mW/cm²) delivering energies of 1.2 J and 6.0 J. One-h after LLLI, the cells were submitted to both 2.5 and 5.0 Gy doses from a ^{60} CO source. After 24-h, mitochondrial activity (MA) was quantified by MTT assay with n= 9/group.
DISCUSSION AND RESULTS
Our data showed that 4T1 cells exposed to LLLI at 1.2 J exhibited higher MA than cells exposed to IR2.5. In contrast, cells exposed to 6 J of LLLI showed lower MA than IR5. Concerning MDA-MB231 cells, no statistically significant differences were noticed among groups regardless of IR and LLLI doses.
CONCLUSION
These findings indicate that LLLI before IR could sensitize only murine breast cancer. Besides, an appropriate combination of IR and LLLI doses seems to play a role to kill TNBC cells.
Keywords: Photobiology, radiotherapy, radiomodifier
Supported by: CAPES, CNPq, CNEN

08855 - Poster Session

EB.15 - Fetuin detection by a promising optical-magnetic multimodal nanoprobe functionalized with Cramoll lectin
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INTRODUCTION
Many researchers are seeking to develop smart nanomaterials due to the diversity of potential applications. Bimodal nanoprobes (BNPs) have gained attention, especially those consisted of quantum dots (QDs) and iron oxide nanoparticles (SPIONs), due to the possibility of combining the advantageous superparamagnetic response of SPIONs and the singular optical properties of QDs. Furthermore, BNPs can be conjugated with biomolecules, such as Cramoll lectin, a glucose/mannose-binding protein purified from *Cratylia mollis* seeds, to become site-specific.
OBJECTIVES
To obtain a multimodal system (BNPs-Cramoll) to detect the fetuin glycoprotein whose levels may be altered in pathologies.
MATERIALS AND METHODS
Carboxyl-coated QDs were covalently combined to aminated SPIONs, and then BNPs were conjugated with Cramoll. The optical properties and the zeta potential of nanosystems were determined. *Candida albicans* yeasts were incubated with BNPs-Cramoll and analyzed through fluorescence microscopy and flow cytometry to evaluate the specificity/efficiency of the nanoprobe. Fetuin detection was performed through fluorimetry.
DISCUSSION AND RESULTS
The QD absorption band was absent in the supernatant of BNPs, indicating effective conjugation with SPIONs. There was a redshift in the maximum emission of BNPs compared to bare QDs; lectin conjugation did not cause a spectral shift. BNPs-Cramoll had a less negative surface charge than BNPs. Approximately 90% of yeast cells were homogeneously labeled by BNPs-Cramoll and after inhibition with methyl-α-D-mannopyranoside, a labeling reduction of *ca.* 3x was observed. When incubated with different concentrations of fetuin (0.675-10.8 mg/mL), a linear decay in the BNPs-Cramoll fluorescence was identified. Incubation with bovine serum albumin (control) did not significantly decrease the fluorescence.
CONCLUSION
BNPs-Cramoll showed to be a specific fluorescent-magnetic nanoprobe able to detect fetuin, promising for the biosensing of this glycoprotein.
Keywords: quantum dot, magnetic nanoparticle, lectin
Supported by: CAPES, CNPq, FACEPE, INCT-INFo, and LARNANO-UFPE.

05089 - Poster Session

EB.16 - Interaction of ruthenium complex with biomolecules and its outcomes of photodynamic efficiency
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INTRODUCTION
Photodynamic therapy (PDT) is related to two non-toxic actors, which are combined to induce cellular and tissue effects in an oxygen-dependent manner. The main actors are the photosensitizer (PS), light absorption and oxygen, which together generate reactive oxygen species (ROS) to inactivate undesirable cells. The PSs approved by FDA involve compounds from the classes of porphyrin, chlorins and phthalocyanines. Recently, metal complexes and especially polypyridine Ru(II) complexes have received