PURDUE INNOVATES | Office of Technology Commercialization

Photodynamic Activity of Vitamin-Chlorin Conjugates at Nanomolar Concentrations against Triple Negative Breast Cancer Cells

Vitamin-chlorin conjugates provide a highly effective, low-concentration photodynamic therapy for treating triple-negative breast cancer.

More than 200,000 cases of breast cancer are diagnosed each year in the United States. The most aggressive type of breast cancer, known as triple negative breast cancer (TNBC), disproportionately affects young premenopausal women of African-American or Hispanic descent. Chemotherapy remains the only treatment for TNBC; however, chemotherapy does not specifically target cancer cells, causing debilitating side effects. A new, targeted therapy is needed to treat TNBC without adverse effects.

Researchers at Purdue University have developed a new technology that could change how breast cancer is treated. The researchers have developed new drug candidates that are potent at lower concentrations than chemotherapy. The technology employs molecules that are selectively taken up by cancer cells and activated by light. In vitro, this therapeutic drug is photoactive at the nanomolar range with an appropriate light dose adjustment and has no observable toxicity when not exposed to light. This targeted therapy promises to reduce the dosage of drug needed to treat TNBC and effectively reduce side effects.

Advantages:

-Reduced adverse effects

-Targeted therapy

-Potent at low concentrations

Potential Applications:

-Breast cancer

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Category

Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics
Pharmaceuticals/Drug Discovery & Development
Materials Science & Nanotechnology/Nanomaterials & Nanostructures

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-Cancer therapeutics

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