New peptide could be effective treatment for triple negative breast cancer

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A new peptide developed by researchers in Temple University's College of Science and Technology has demonstrated efficacy against triple negative breast cancer.

The leptin receptor antagonist peptide, developed by researchers Laszlo Otvos and Eva Surmacz, could become an attractive option for triple negative breast cancer treatment, especially in the obese patient population. The researchers published their findings online in the European Journal of Cancer.

According to the researchers, triple-negative breast cancers—which represent 10□□ percent of all mammary tumors—are characterized by the aggressive traits that is often found in younger women and have been associated with poor prognosis.

"Obesity increases the risk for triple-negative breast cancer development," said Surmacz, an associate research professor in biology at Temple. "Because triple-negative breast cancer patients are unresponsive to current targeted therapies and other treatment options are only partially effective, new pharmacological modalities are urgently needed."

Leptin, a protein that is always elevated in obese individuals and is higher in women than in men, can act locally within the body and promote cancer development by inducing the survival and growth of tumor cells, counteracting the effects of cancer therapies, and promoting

metastasis. Previous studies by Surmacz suggested that leptin levels are significantly higher in aggressive breast tumors than in normal breast tissue.

In their study, the researchers examined if the leptin receptor was a viable target for the treatment of this type of cancer. It has been shown that in human triple negative breast cancer tissues, the leptin receptor was expressed in 92 percent and leptin in 86 percent of cases.

Using a mouse model of triple negative breast cancer, they tested the new leptin receptor antagonist peptide and compared it to conventional chemotherapy. The leptin receptor antagonist peptide extended the average survival time by 80 percent, compared to 21 percent for chemotherapy. The peptide was found to be non-toxic even up to the highest dose administered, said Sumacz.

"If this peptide, with its advantageous administration route and safety profile, can be developed as a drug it could be a useful addition to the existing oncology drug repertoire against various forms of cancer, including breast, brain, prostate and colon cancers," said Sumacz.

Provided by Temple University

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