

Use of disulfiram for inflammatory breast cancer therapy

Value Proposition

Inflammatory breast cancer is an aggressive and rapidly progressing form of breast cancer. It typically presents with rapid onset of painful primary skin changes and breast swelling, often without an obvious breast mass. Inflammatory breast cancer disproportionately affects women from minority populations, and is therefore considered a health disparity. Due to its difficulty in detecting, inflammatory breast cancer it often reaches late stage by the time of diagnosis. Despite multimodal aggressive treatment regimens including radiation therapy and/or chemotherapy, inflammatory breast cancer shows a high rate of recurrence. Local treatment failure is associated with survival of hyperproliferative cluster of tumor cells that are frequently resistant to therapy. Therefore, new molecular therapeutic targets need to be identified to improve treatment and increase patient survival.

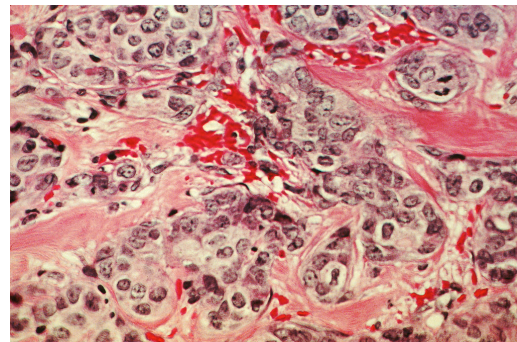
Technology

Researchers at Duke have reported a new approach for targeting inflammatory breast cancer cells. Disulfiram, a potent redox modulator, induced the accumulation of reactive oxygen species and cell death in inflammatory breast cancer cells when combined with exogenous copper. By targeting the oxidative stress response and the anti-apoptotic program, the researchers were able to inhibit tumor growth in mouse model of inflammatory breast cancer. Thus, disulfiram-copper combination can be used as a novel anticancer drug to enhance therapeutic sensitivity in inflammatory breast cancer.

Advantages

- Disulfiram forms a complex with copper increasing intracellular copper concentration both in vitro and in vivo, bypassing the need for membrane transporters
- Disulfiram together with copper inhibits tumor growth without significant toxicity, causing apoptosis only in tumor cells
- Targets a potent anti-apoptotic protein that is associated with chemoresistance in many cancer types
- Inhibits a redox sensor that is a critical molecular determinant in inflammatory breast cancer progression

Duke
LICENSING
& VENTURES



Duke File (IDF)

T-004601

Inventor(s)

- Devi, Gayathri

Links

- [From the lab of Dr. Gayathri Devi](#)
- [Duke study targets rare, inflammatory breast cancer](#)

College

School of Medicine (SOM)

For more information please contact

Jung, Jee
919-623-6275
jee.jung@duke.edu

Publications

- [XIAP Regulation by MNK Links MAPK and NFκB Signaling to Determine an Aggressive Breast Cancer Phenotype \(Cancer Research, 2018\)](#)
- [Inflammatory Breast Cancer Tumor Emboli Express High Levels of Anti-Apoptotic Proteins: Use of a Quantitative High Content and High-Throughput 3D IBC Spheroid Assay to Identify Targeting Strategies \(Oncotarget, 2017\)](#)
- [Disulfiram \(DSF\) Acts as a Copper Ionophore to Induce Copper-Dependent Oxidative Stress and Mediate Anti-Tumor Efficacy in Inflammatory Breast Cancer \(Molecular Oncology, 2015\)](#)

Patents

Patent Number: 10,195,164

Title: USE OF DISULFIRAM FOR INFLAMMATORY BREAST
CANCER THERAPY

Country: United States of America