MDA-MB-231

MDA-MB-231 is a widely studied human breast cancer cell line that has been extensively used in cancer research. Here are some key characteristics and information about MDA-MB-231 breast cancer cells:

Origin: MDA-MB-231 cells were derived from a pleural effusion of a 51-year-old woman with metastatic breast adenocarcinoma. The cells were first isolated in the late 1970s.

Triple-Negative Breast Cancer (TNBC): MDA-MB-231 cells are classified as triple-negative breast cancer cells. This means that they lack the expression of estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2/neu). TNBC is known for its aggressive behavior and limited treatment options compared to other subtypes of breast cancer.

Invasive and Metastatic Properties: MDA-MB-231 cells are highly invasive and exhibit metastatic behavior. They are commonly used in research focused on understanding the molecular mechanisms underlying breast cancer metastasis.

Morphology: MDA-MB-231 cells typically display a spindle-like or fibroblast-like morphology.

Research Applications: These cells are widely used as an experimental model in various areas of cancer research, including studies on tumor biology, angiogenesis, metastasis, drug resistance, and therapeutic development.

Use in Xenograft Models: MDA-MB-231 cells are often used in xenograft models, where they are injected into immunocompromised mice to study tumor growth, invasion, and response to experimental treatments.

Genetic Characteristics: The MDA-MB-231 cell line has been characterized at the genetic level, and researchers often analyze its genomic features to understand the molecular basis of breast cancer.

Researchers choose MDA-MB-231 cells for their aggressive and metastatic properties, making them valuable tools for investigating various aspects of breast cancer biology and testing potential therapeutic interventions.

In metastatic 435-Lung and MDA-MB-231 breast cancer cells, they found that edelfosine also inhibited cell adhesion to collagen-I and laminin-I substrates, cell migration in chemotaxis and wound-healing assays, as well as cancer cell invasion. In 435-Lung and other MDA-MB-435-derived sublines with different organotropism, edelfosine induced G2/M cell cycle accumulation and apoptosis in a concentration- and time-dependent manner. Edelfosine also inhibited in vitro angiogenesis in human and mouse endothelial cell tube formation assays. The antimetastatic properties were specific to cancer cells, as edelfosine had no effects on viability in non-cancerous cells. Edelfosine accumulated in membrane rafts and endoplasmic reticulum of cancer cells, and membrane raft-located CD44 was downregulated upon drug treatment. Taken together, this study highlights the potential of edelfosine as an attractive drug to prevent metastatic growth and organ colonization in cancer therapy. The raft-targeted drug edelfosine displays a potent activity against metastatic organ colonization and angiogenesis, two major hallmarks of tumor malignancy [1)]

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Alonso-Pérez V, Hernández V, Calzado MA, Vicente-Blázquez A, Gajate C, Soler-Torronteras R, DeCicco-Skinner K, Sierra A, Mollinedo F. Suppression of metastatic organ colonization and antiangiogenic activity of the orally bioavailable lipid raft-targeted alkylphospholipid edelfosine. Biomed Pharmacother. 2024 Jan 23;171:116149. doi: 10.1016/j.biopha.2024.116149. Epub ahead of print. PMID: 38266621.