Poster 8

Identification of IL-11 in HOXB7 overexpressing TNBC cells

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Purpose

The HOX gene family is crucial in determining cellular identity during development, with HOXB7 acting as a central regulatory gene for target development and differentiation molecules. Previous research has shown that HOXB7 amplification is linked to a poor prognosis and that it can drive epithelial cells towards an epithelial-mesenchymal transition (EMT) phenotype. Additionally, HOXB7 has been identified as a key master regulator of tamoxifen resistance through the activation of several receptor tyrosine kinase pathways, including EGFR. HOXB7 overexpression has also been shown to induce angiogenesis and macrophage recruitment via TGFβ2 upregulation, indicating a critical role in the crosstalk between endocrine-resistant breast cancer and the tumor microenvironment (TME). To further understand this relationship, MDA-MB-231-HOXB7 overexpressing cell lines were established in this study. The aim is to identify a secreted factor in the crosstalk between HOXB7 overexpressing cells and stromal cells that promotes cancer cell proliferation and migration.

Methods

We utilized a human cytokine array to identify putative candidates of secreted factors in HOXB7 overexpressing cells and validated them by qRT-PCR and ELISA. In addition, using HOXB7 siRNAs, we confirmed that IL-11 expression is dependent on HOXB7 expression. Furthermore, we performed a cell viability analysis to determine a functional role of IL-11.

Results

Using a human cytokine array, 10 putative candidates of secreted factors were selected, and it was found that IL-11 expression was upregulated in MDA-MB-231-HOXB7 cells. Depletion of HOXB7 by siRNAs decreased IL-11 expression, as confirmed by real-time qRT-PCR and ELISA analysis.

Conclusion

Overall, this study aims to identify a novel secreted factor as a drug target to inhibit breast cancer cells with HOXB7 expression. Ultimately, the findings will enable the identification of drug regimens with activity against TNBC, which can be used to design and conduct clinical trials.

Keywords: Breast cancer, HOXB7, IL-11