

عنوان مقاله:

Endoplasmic reticulum stress enhances breast cancer stem cell population in vitro

محل انتشار:

نهمین کنگره بین المللی سرطان پستان (سال: 1392)

تعداد صفحات اصل مقاله: 1

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خلاصه مقاله:

Cancer stem cells (CSCs) are defined the cells with stem cell properties within a tumor that can self-renew and drive tumorigenesis. CSCs are related with tumor invasion, resistance to chemotherapies and recurrence. In other hand Endoplasmic reticulum (ER) stress is an essential process for cellular homeostasis and regulation of endoplasmic reticulum that sets out with unfolded protein accumulaton in ER lumen. In this study we aimed to assess breast cancer stem cell population under ER stress in MCF7 cell line. Endoplasmic reticulum stress was stimulated by treatment with 2 µg/ml tunicamycin for 48 hours then population of CD44+/CD24- cells was analyzed using flow cytometry technique. Also breast cancer stem cells were sorted and collected applying FACS cell sorting analysis. We evaluated XBP1 mRNA splicing by quantification of pre- and mature XBP1 mRNA, and CHOP gene expression levels using real time qPCR and western blotting in order to assessment of ER stress level in both total and CD44+/CD24- cells. In result the percentage CD44+/CD24- cell population to total cells, was determined as 6.2% for tunicamycin treated cells, and 0.99% for untreated negative control cells ($P < 0.01$). Also, increased levels of mRNA splicing of XBP1 and expression of CHOP gene were observed in breast CSCs which treated with tunicamycin indicating ER stress condition. These results suggest that ER stress may increase breast cancer stem cell population to more than .six times in compare with cells without the stress

کلمات کلیدی:

Breast cancer, Cancer stem cells, ER stress, FACS

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