

Suppression of GADD45 α transcription mediated by HPV16 oncoproteins and BRCA1 promotes breast cancer cell migration

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Abstract: Breast cancer is the most common cancer in women worldwide. To date, many risk factors of breast cancer have been identified. BRCA1 is one of the most important proteins involved in breast cancer development. Interestingly, HPV DNAs have been increasingly detected in breast cancer specimens. However, the exact role of HPV implicated in breast cancer development is not well-examined. Growth arrest and DNA damage-inducible 45 α (GADD45 α) is known as a repressive gene involved in cell cycle regulation and found to be repressed in the expression in many types of cancers. In this study, we aimed to examine the effect of HPV oncoproteins and BRCA1 on GADD45 α expression in breast cancer cells. MDA-MB-231 breast cancer cell line stably expressing HPV16 oncoproteins was generated. The expression of GADD45 α and *in vitro* cell migration were analyzed in these cells. The effect of BRCA1 on GADD45 α gene expression as determined by RT-qPCR revealed that GADD45 α was significantly repressed in HPV16 oncoprotein expressing cells. Repression of GADD45 α promoted cell migration in these cells as compared to cells without HPV oncoproteins. Moreover, restoration of GADD45 α expression was observed in BRCA1 knocked-down cells in both cells with and without HPV16 oncoproteins. Thus, we demonstrated the involvement of BRCA1 in regulating GADD45 α gene expression and that the suppression of GADD45 α expression induced by HPV16 oncoproteins promotes breast cancer cell migration.

Keywords: HPV16; GADD45 α ; BRCA1; migration; breast cancer



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