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Effects of *Paeonia lactiflora* on the *Hs00* gene expression in triple negative breast cancer cells

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Background & Aim: Triple negative breast cancer (TNBC) has poor prognosis feature due to its high abilities of metastasis and recurrences. Our previous clinical researches show that the recurrence of TNBC has positive correlation with Hs00 gene expression. Furthermore, Hs00 gene is also related to the pro-inflammatory cytokine interleukin 17A (IL-17A) which builds a tumorigenesis environment. Traditional Chinese medicine (TCM) *Paeonia lactiflora* is commonly used to release the side effects of chemotherapy in Asia, but the influence of *Paeonia lactiflora* on the Hs00 gene and IL-17A expression remains unknown. The aim of this study is to investigate the effects of *Paeonia lactiflora* on Hs00 gene, IL-17A and its signaling pathway in TNBC cell lines.

Methods: TNBC cell lines of MDA-MB-231 and MDA-MB-468 were used in *in vitro* studies. Drug screening of TCM was performed by luciferase reporter assay. The toxicity of drugs was assessed by MTT assay. Elisa assay was used to quantify the concentration of IL-17A in TNBC cell lines. Wound healing assay and Transwell invasion assays were utilized to determine the TNBC cell lines migration and invasion abilities. Hs00, IL-17A and its signaling pathways were evaluated by western blot and RT-PCR.

Results: The Hs00 gene is related to cell growth through the Akt pathway, knock down Hs00 gene caused the decrease of Akt phosphorylation in both TNBC cell lines, and also decrease the migratory activity of MDA-MB-231. IL-17A influences the Src signaling pathways also increase migration and invasion capabilities in TNBC cell lines. The drug screening results shows that *Paeonia lactiflora* has potentially enhanced the Hs00 gene expression. There is a positive correlation between IL-17A and Hs00 in RT-PCR, in addition, *Paeonia lactiflora* was demonstrated to increase TNBC cells growth and up-regulated Hs00 gene expression and increased COX2 expression via activation of Akt signaling.

Conclusion: Our results demonstrated the cross-talk relationship between the Hs00 gene and IL-17A. We conclude that *Paeonia lactiflora* up-regulated Hs00 gene expression and enhanced cell migratory activity through the activation of Akt signaling pathway.

Biography

Jou An Chen has completed her Bachelor's degree from Department of Nutrition Science of Fu Jen Catholic University, and already got the dietitian license. During the past four years, she learned therapeutic nutrition, which has the same idea as food as medicine. The importance of nutrition therapy is provision of nutrients to maintain optimal health. In Asia, it's common to use traditional Chinese herbs not only as drugs but also as herbal cuisine. Therefore, as a dietitian, she is curious about the association between nutrition and traditional Chinese herbs. Now, she is majoring in Traditional Medicine in National Yang Ming University for her Master's degree. Traditional Chinese herbs have thousands years of history, but it still needs more researches to understand the mechanisms. My advisor, Jen-Hwey Chiu, M.D., Ph.D., found out that the recurrence of triple negative breast cancer has positive correlation with Hs00 gene expression. Therefore, I want to understand the influence of traditional Chinese herbs on triple negative breast cancer.

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