

## عنوان مقاله:

Overexpression of Stem Cell Protein, PIWIL2, Promotes the Invasive Characteristics of DU145 Prostate Cancer Cell Line

## محل انتشار:

سومین جشنواره ملی و کنگره بین المللی علوم و فناوری های سلول های بنیادی و پزشکی بازساختی (سال: 1397)

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## خلاصه مقاله:

**Background and Aim:** Prostate cancer is the second cause of cancer death in the world. Invasion of malignant tumor cells via epithelial to-mesenchymal transition (EMT) is the main cause of death in cancer patients. The stem cell protein, PIWIL2, is a member of the Argonaute family, plays an important role in the EMT process by controlling and enhancing the invasive properties of cells. In this study, we aimed to examine the effect of overexpression of piwil2 gene and its effects on EMT process in the prostate cancer cell line, DU145. **Methods:** DU145 cell line was cultured in the RPMI media containing 10% fetal bovine serum (FBS) with 1% penicillin-streptomycin (Pen-Strep) suggested by ATCC. In order to provide DU145-PIWIL2 cell line, these cells were transfected by PCDNA3 vector expressing human piwil2 gene driven by CMV promoter via electroporation method. To provide DU145-mock cells, PCDNA3 empty vector was transferred to the cells via electroporation. G418 was then applied to the transfected cells for 4 weeks to establish stable cell lines before further cell and molecular analysis. To investigate the effect of Piwil2 gene overexpression on cell growth, the doubling time method was performed to compare the cell growth rate between DU145-PIWIL2 and DU145-mock cells. Moreover, the expression of EMT biomarkers was investigated in the two cell lines using RT-PCR and Real-Time PCR. **Results:** The doubling time analysis profiled a significant increase in DU145-PIWIL2 cells growth rate compared to DU145-mock cells, exhibiting 2.31 times higher growth in the cells overexpressing PIWIL2. Quantitative real-time PCR indicated changes in some canonical EMT biomarkers including E-cadherin, Vimentin, and Snail, with 0.77 decreases in E-cadherin expression, as well as 1.36 and 2.01 increase in Vimentin and Snail expressions respectively. **Conclusion:** In this study our data showed that overexpression of Piwil2 gene promoted the growth rate of DU145 cells and induced the EMT process in these cells, hence enhancing the invasive potential of cancer cells. Therefore, these data profiled piwil2 as an important biomarker in assessing the malignant state of prostate cancer with application in procedures related to cancer diagnostics and targeted therapies.

## کلمات کلیدی:

Piwil2; DU145; Prostate cancer; Epithelial-to-mesenchymal transition

## لینک ثابت مقاله در پایگاه سیویلیکا:

