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**Elucidating the Effect Of YB-1 Protein on the Stromal Expression of Collagenases in Malignant Melanoma Cells in Vitro**

1Wisam Nabeel Ibrahim\*, 2Ridhwan Abdul Wahab, 3Abd Monem Doolanea and 2Mohammad Syaiful Bahari Abdul Rasad

*1Department of Basic Medical sciences, Faculty of Nursing, International Islamic University Malaysia. 2Department of Biomedical sciences, Faculty of Allied Health sciences, International Islamic University Malaysia. 3Department of Pharmaceutical technology, Faculty of Pharmacy, International Islamic University Malaysia.*

**ABSTRACT**

Malignant melanoma is one of the most invasive types of cancer with a median survival time of 6 months and a 5-year survival rate of less than 5% in the metastatic type. The process of cancer invasion commonly starts with an increased expression of matrix metallo proteases causing enzymatic destruction basement membrane components. These enzymes are predominantly expressed by cancer and stromal cells allowing the escape of cancer cells to adjacent tissues and causing poor life expectancy. YB-1 protein is an important factor in this process due to diversity in its function being correlated with well known cancer signaling pathways and its association with poor prognosis in many types of cancer. However; its effect on stromal cell activation in malignant melanoma cancer is not clearly stated. In this study, a co-culture environment was established between A375 malignant melanoma cell line and skin fibroblast cell line. In order to elucidate the effect of YB-1 protein, a stable cell line was established after transfection with a silencing short hairpin RNA (shRNA) construct. The silencing effect was validated by the use of real time PCR, western blotting and immune staining. Cell cycle arrest was determined by the use of flow-cytometry; while, cellular proliferation was determined by colorimetric MTT assay. The study elucidated that YB-1 silencing was associated with down regulation of certain members of collagenases enzymes and up regulation of other collagenases members. Yb-1 silencing was also associated significant reduction in cancer cell proliferation and cell cycle arrest. YB-1 and stromal cells represents important targets in the development of cancer treatment due to their correlation with the proliferation of cancer cells and their association with expression of collagenases.