Seeking a Cure II: Targeting ERβ in a Novel Cost-Effective Treatment for Ovarian Epithelial Cancer

Hernandez, Jocelyn

Despite high responses to current therapeutic methods, about 90% of ovarian cancer patients develop recurrence. The inability to efficiently combat metastasis makes ovarian cancer lethal as it reaches organs fundamental for homeostasis. The purpose of the study was to determine whether S-Equol, a metabolite of the soy isoflavone daidzein, could be effectively employed in ovarian cancer treatment. It was hypothesized that S-Equol could be used to target ovarian cancer cell lines through the ERβ pathway leading to apoptosis and tumor suppression. Ovarian cancer cell lines BG-I, ID8, ES2 and SKOV3 are used in this study. MTT assay was used to determine the effect of different doses of S-Equol (1μM-500μM) on cell survival at 72 hours. qRT-PCR analysis was carried out using cDNA generated from ovarian cancer cell lines that were treated with vehicle or S-Equol (100μM) for 24h. Primers specific for ERβ isoform (ERβ5) and apoptosis genes (PUMA and NOXA) were used. MTT assay revealed that S-Equol treatment effectively reduced percentage cell survival in a dose dependent manner. The IC50 of S-Equol for the ovarian cancer cell lines is approximately 100μM. qRT-PCR analysis to determine the expression of ERβ revealed that its expression was elevated in ovarian cancer cell lines compared to MCF-7 breast cancer cells (positive control). Upon S-Equol treatment, the expression of pro-apoptotic genes such as PUMA and NOXA were elevated in ovarian cancer cells. Based on the results, it can be concluded that S-Equol could be used as a novel therapeutic agent to effectively target ovarian cancer.

Awards Won:

Third Award of $1,000