Synergistic Anti-Tumor and Anti-Migration Activity of Adlay (Coix lachryma-jobi L. var. ma-yuen Stapf) Extract and Paclitaxel on Human Endometrial Cancer Cells

Adlay has long been used in traditional Chinese medicine and as a nourishing food. Adlay extract has been shown to exert antiproliferative effects on breast cancer cancer cells in vitro. Drug resistance frequently develops in tumors during chemotherapy. Therefore, to improve the clinical outcome, more effective and tolerable combination treatment strategies are needed. In this study, we investigated the effect of adlay extract on synergistic anti-tumor activity with paclitaxel and anti-metastatic potency of adlay extract via modulation of the expression of VEGF and MMP in the highly metastatic human endometrial cancer cell line. CalcuSyn software was used to evaluate the synergistic interaction of adlay extract and paclitaxel on human endometrial cancer cells. Cell viability is detected by MTT and BrDU assay after variant adlay extract dosage treatment. Adhesion, wound-healing, and transwell migration assays were performed in endometrial cancer cells (RL95-2 and HEC-1A). Expression of matrix metalloproteinase (MMP)-2, MMP-9, and VEGF were measured by Western blot analysis. Here, we show that adlay extract (100 and 200μg/ml) enhanced paclitaxel-induced apoptotic death in human endometrial cells (RL95-2, HEC-1A). Wound-healing and transwell migration assays revealed that adlay extract (50μg/ml) inhibited migration in HEC-1A cells. According to chamber migration assay and wound migration assay,adlay extract significantly suppressed the migration of HEC-1A cells at 24 h and 48 h. It was further demonstrated that treatment with adlay extract (100 and 200 μg/ml) significantly decreased the levels of MMP-2, MMP-9.