

News & Comments

Importance of *Tanshinone* in Mediating the Signalling Pathways in the HUVECs

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According to studies, the medicinal herb *Salvia miltiorrhiza's* component Tanshinone possesses neuroprotective properties against the pathogenic aspects of numerous disorders. Recently, it has become popular to use gene microarray and bioinformatics analysis to find possible biomarkers for various illnesses, including cancer. It's interesting to note that research was done using integrated bioinformatics tools to find disease-related genes that were connected to the prognosis of breast cancer. However, a few studies have been done to determine the genes that are differentially expressed following Tanshinone treatment. Analyzing Tanshinone predictive properties in human umbilical vein endothelial cells will help us find disease-related genes (HUVECs).

The HUVEC were bought from Maide Biotech in Jinan, China, and cultivated following the earlier explanation. We bought Tanshinone from Baili Biotech (Shanghai, China). Three groups of cells were created: the control group, the vehicle group, and the Tanshinone group. Each group's cells (5103) were cultured for 48 hours before the MTT experiment, which was conducted as previously mentioned. Using the BLAST clust function in the BLAST package from NCBI, a clustering analysis was carried out to eliminate redundancy among the amino acid sequences. The SPSS 20.0 program was used to conduct the statistical analysis. Numbering information was displayed as Mean Standard Deviation.

The Tanshinone group was able to dramatically slow down HUVEC growth as compared to the vehicle group. Based on the development of HUVECs, Tanshinone's inhibitory effects showed no pattern of dose-dependence. The expression of 30 genes was examined using real-time PCR. 18 of these genes showed an up-regulation following Tanshinone therapy. The genes connected to various signalling pathways were then examined using signalling pathway analysis. The data demonstrated that the ERK5 signalling pathway was considerably suppressed in the treatment group as compared to the control group and vehicle group, with a Z score of -2.530, respectively. Tanshinone IIA may reduce the levels of IL-1 β , IL-6, and TNF- α cytokines in immune vasculitis and platelets, according to a study of inflammation damage of vessels in patients with immune vasculitis through the inhibition of cytokines and platelets.

In conclusion, Tanshinone decreased HUVEC growth and caused differential gene expression in vitro. According to enrichment analysis, the ERK5 signalling pathway came out on top in both the GO and KEGG analyses.



JOURNAL REFERENCE

Tang, X., C. Chen, G. Cheng, Y. Chen, C. Li and X. Yang, 2022. Prognostic values of tanshinone in mediating the activity of human umbilical vein endothelial cells. *Int. J. Pharmacol.*, 18: 983-993.

KEYWORDS

Cardiovascular diseases, Tanshinone, KEGG analysis, signalling pathways, differentially expressed genes, microarray, cellular proliferation

