The Role of ESE-1 in Tumorigenesis and Metastasis in Human Non-Small Cell Lung Cancer (NSCLC) Cells

Zhiyuan Lou* (1)(S), Bok-Soon Lee (2), Taekyu Ha (1), Chul-Ho Kim (2), Seong-Ho Lee (1)

(1) Department of Nutrition and Food Science, College of Agriculture and Natural Resources, University of Maryland, College Park, MD 20742, USA
(2) Department of Otolaryngology, School of Medicine, Ajou University, Suwon, Republic of Korea

Abstract:

Objectives
Lung cancer is the leading cause of cancer mortality in the United States due to poor prognosis. Identification of effective molecular target is essential for lung cancer prevention and therapy. Epithelial Specific ETS-1 (ESE-1) is a transcription factor that belongs to ETS superfamily and associated with development of several types of cancer. However, a role of ESE-1 in lung cancer remains unanswered. The objective of the current study was to investigate if ESE-1 expression influences tumorigenic and metastatic activity of human non-small cell lung cancer (NSCLC).

Methods
Soft agar, FACS analysis, apoptosis, invasion and migration assays were prepared to investigate the phenotype of ESE-1-stably overexpression cells. Xenograft study was performed to identify the formation and development of tumor. ESE-1 promoters were transfected into H1299 and H1703 cells and the luciferase activity was measured using a dual-luciferase assay kit. EMT was induced by treatment of TGF-β to smad2- and smad3 knockdowned A549 cells. ESE-1 expression was measured using Western blotting.

Results:

Figure 1. Basal expression of ESE-1 in human lung cancer cells.

Figure 2. ESE-1 represses cell migration and invasion of lung cancer cells.

Figure 3. ESE-1 suppresses formation and development of tumor in vivo.

Conclusion

ESE-1 has the anti-tumorigenic and anti-metastatic activities in human NSCLC cells.

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