Abstract

Project Code: MG5980021

Project Title: Role of calmodulin-regulated spectrin-associated proteins (CAMSAPs) , microtubule minus end-binding proteins, on epithelial-to- mesenchymal transition in lung cancer metastasis

Investigator: Assistant Professor Varisa Pongrakhananon, Ph.D.

E-mail Address: Varisa.p@pharm.chula.ac.th

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Abstract:

Lung cancer is one of the leading causes of cancer-related death worldwide because of cancer metastasis. Cancer metastasis is a complicated multistep process beginning with cancer cells detachment from the extracellular matrix (ECM), migration, invasion and extravasation to the circulating system. Accumulating evidences have indicated the roles of epithelial to mesenchymal transition (EMT) in cancer aggressiveness and metastasis which they are relevant with the cause of high mortality rate of cancer. The remarkable morphological changes from cobble stone-like epithelial morphology to elongated-like mesenchymal type during EMT are involved with the alteration of cytoskeleton and adhesion molecule facilitating cell motility and hence metastasis. Recent researches have emphasized on the effect of microtubule dynamic on this phenotype changes which proposed to be regulated by microtubule-binding protein. Calmodulin-regulated spectrin-associated proteins (CAMSAPs), microtubule minus-end binding family proteins, have been reported to play pivotal regulator on microtubule behavior and proper organelle assembly during embryonic development. However, the roles of CAMSAPs on EMT in cancer are not characterized before. This study discovered that CAMSAP3 negatively regulated EMT process, which the CAMSAP3 knockout using CRISPR-Cas9 system potentiated the mesenchymal-like phenotype with an upregulation of mesenchymal markers. Furthermore, following CAMSAP3 depletion, tubulin became more

stabilized that required for sustain active status of protein kinase B (PKB/Akt), an EMT-regulatory protein. This study provides better understating in cancer biology on the novel function of CAMSAP3 and possible drug target against cancer metastasis.

Keywords Calmodulin-regulated spectrin-associated proteins, microtubule, epithelial to mesenchymal transition, lung cancer