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Role of cholesterol transporters, *ABCA1* and *ABCG1* in cholangiocarcinoma

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Statement of the Problem & Purpose: Epidemiology of cholangiocarcinoma (CCA) is high in Thailand and Southeast Asia. It is highly aggressive and poorly studied. In this investigation, the role of cholesterol transporters, ATP-binding cassette (ABC) A1 and *ABCG1* are studied in HuCCA-1 cell line. *ABCA1* and *ABCG1* transporters are suspected to play a role in CCA lipid homeostasis.

Methodology: The expression and localization of *ABCA1* and *ABCG1* were investigated by western blot analysis and immunocytochemistry, respectively. The functions of *ABCA1* and *ABCG1* in CCA cells were examined out by cholesterol efflux assay to specific cholesterol acceptor and high-density lipoprotein (HDL). *ABCG1* transporter was down regulated using siRNA interference. Cell phenotypic changes such as cell migration and cholesterol export ability were observed by wound healing and cholesterol efflux experiments, respectively.

Findings: *ABCA1* and *ABCG1* transporters were expressed in HuCCA-1 cells. Correspondingly, localization of *ABCA1* was exhibited around the nucleus while *ABCG1* pattern was more scattered throughout cytoplasm. Moreover, cholesterol exports via *ABCA1* and *ABCG1* to HDL were observed. While *ABCG1* level was down regulated, the retention of *ABCA1* expression was illustrated. Comparable level of cell migration was displayed between control and *ABCG1* silenced cells. In addition, there were no change in cholesterol efflux to HDL among these treatments.

Conclusion & Significance: This research indicated the expressions and cholesterol export function of *ABCA1* and *ABCG1* in CCA. While silencing *ABCG1*, there was no obvious cell phenotypic characteristics such as wound healing and cholesterol efflux. This hints the possible and predominant role of *ABCA1* transporter in CCA which requires further study. This investigation sheds light on cholesterol biology and possible therapeutic target in CCA.

Biography

Pattaya Seeree is currently a PhD student in Department of Biology at Mahidol University, Thailand. She has received her Bachelor's degree in Biomedical Science in 2010 at Griffith University, Australia, followed by Master's degree in Biotechnology at Queensland, University of Technology, Australia. She is a Recipient of National Research Council of Thailand (NRCT) scholarship for her PhD research funding. She has her expertise in cancer biology and ATP-binding cassette (ABC) transporter. Her work is focused on cholesterol transporters in term of their molecular biology, roles and as a possible biomarker for cholangiocarcinoma.

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