

F02

## Solasodine inhibits invasion of human lung cancer cell through downregulation of miR-21 and MMPs expression

Chia-Wei Chang (張家維)<sup>1</sup>, Yu-Ting Weng (翁郁婷)<sup>1</sup>, Hsing-Yi Chen (陳幸儀)<sup>1</sup>, Pin-Shern Chen (陳品晟)<sup>1\*</sup>

<sup>1</sup>Department of Biotechnology, Chia Nan University of pharmacy and Science, Tainan, Taiwan

Solasodine is a naturally occurring aglycone of glycoalkaloid in a number of Solanum species (Solanaceae). Solasodine is used for the production of steroid drug in medical industry and that have been reported to inhibit proliferation in various tumor cells. However, the effect of solasodine on tumor metastasis remains unclear. This study investigates the suppression mechanism of solasodine on motility of human lung cancer cell A549 in vitro. Results show that solasodine inhibits viability of lung A549 cells in a dose-dependent manner. When treated with non-toxic doses of solasodine, cells invasion were suppressed significantly by in vitro Boyden chamber invasion assay. Solasodine reduces the mRNA level of matrix metalloproteinase-2 (MMP-2), MMP-9 and extracellular inducer of matrix metalloproteinase (EMMPRIN), but increases the expression of reversion-inducing cysteine-rich protein with kazal motifs (RECK), as well as tissue inhibitor of metalloproteinase-1 (TIMP-1) and TIMP-2. Immunoblotting assays indicate that solasodine is effective in suppressing Akt phosphorylation. Moreover, solasodine downregulates oncogenic microRNA-21 (miR-21), which has been known to target RECK. Downregulation of miR-21 by miR-21 inhibitor increases RECK expression and decreases cell invasion, suggesting that downregulation of miR-21 by solasodine may contribute to elevate RECK expression and subsequently inhibiting cell invasion. Taken together, the results reveal that inhibition of A549 cell invasion by solasodine may be, at least in part, through blocking MMP expression. Solasodine also reduces PI3K/Akt signaling pathways and downregulates expression of miR-21. These findings demonstrate an attractive therapeutic potential for solasodine in anti-metastatic therapy.