

Identification of distinct N-glycosylation patterns on extracellular vesicles from small-cell and non-small-cell lung cancer cells

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論 文 要 旨

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Abstract

Asparagine-linked glycosylation (N-glycosylation) of proteins in the cancer secretome has been gaining increasing attention as a potential biomarker for cancer detection and diagnosis. Small extracellular vesicles (sEVs) constitute a large part of the cancer secretome, yet little is known about whether their N-glycosylation status reflects known cancer characteristics. Here, we investigated the N-glycosylation of sEVs released from small-cell lung carcinoma (SCLC) and non-small-cell lung carcinoma (NSCLC) cells. We found that the N-glycans of SCLC-sEVs were characterized by the presence of structural units also found in the brain N-glycome, while NSCLC-sEVs were dominated by typical lung-type N-glycans with NSCLC-associated core fucosylation. In addition, lectin-assisted N-glycoproteomics of SCLC-sEVs and NSCLC-sEVs revealed that integrin αV was commonly expressed in sEVs of both cancer cell types, while the epithelium-specific integrin $\alpha 6 \beta 4$ heterodimer was selectively expressed in NSCLC-sEVs. Importantly, N-glycomics of the immuno-purified integrin $\alpha 6$ from NSCLC-sEVs identified NSCLC-type N-glycans on this integrin subunit. Thus, we conclude that protein N-glycosylation in lung cancer sEVs may potentially reflect the histology of lung cancers.