A study of proteomics pattern of tissue subtypes of lung adenocarcinoma in the King Chulalongkorn Memorial Hospital

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The Thai Cancer, 2016, 31.59.018

**Background:** Lung cancer is a leading cause of mortality worldwide including Thailand. The major histologic subtype is adenocarcinoma. Recently a revised histopathological classification including adenocarcinoma subtypes has been implemented. The classification is heavily relied on morphological appearance of lung cancer. We sought to characterize proteomics signatures to distinguish subtypes of the lung adenocarcinoma which may suitable for a molecular classification.

**Method:** All patients were early stage resected lung adenocarcinoma diagnosed and treated at the King Chulalongkorn Memorial Hospital during January 2551 to December 2557. Demographic and clinical information were collected from medical record review. All collected tumor tissue were analyzed with liquid chromatography-tandem mass spectrometry technique for possible proteomics pattern. Proteomics pattern were analyzed for signatures of individual histologic pattern. Additional correlative analyses of proteomics signatures with available clinical data were performed.

**Results:** Total 27 samples were included in the study. Most patients were stage I to III lung adenocarcinoma with predominant male gender. Under unsupervised classification, we could not find an obvious proteomics pattern to distinguish adenocarcinoma subtypes. However, using supervised classification by dividing subgroups between solid versus non-solid subtype, we found a group of robust signatures for solid histology by hierarchical clustering and principal component analysis. In the solid group, the clinical outcomes were poorer to the non-solid group. The disease free survival was 11 months in solid compared to not reach in non-solid pattern and this was statistically significant (95% CI 1.46-21.07, P = 0.012). Moreover the overall survival was 24 months in the solid pattern compared with 59 months in the non-solid pattern (95% CI 0.85-6.59, P = 0.09) though this was not statistically significant.

**Conclusion:** With limited sample number, we found a group of proteomics signatures of solid subtype of lung adenocarcinoma. A larger cohort will be needed to confirm the important of this proteomic signatures of solid subtype lung adenocarcinoma and may serve as biomarker for lung cancer in the future.