

POSTER PRESENTATION

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# MicroRNA-21 in lung cancer: overexpression in metastasis of pulmonary adenocarcinomas and squamous cell carcinomas

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MicroRNAs (miRNAs) are a class of naturally occurring small non-coding RNAs that target protein-coding mRNAs at the post-transcriptional level. Expression profiling has identified miRNA signatures in cancers that associate with diagnosis, staging, progression, prognosis, and response to treatment. MiRNAs are ideal biomarkers in FFPE-tissue because, unlike mRNA, miRNA integrity is affected very little by formalin fixation. Previous studies have shown that miR-21 overexpression correlated with poor prognosis in NSCLC patients.

In this study we investigated the expression of mir-21 in primary carcinoma and metastasis and near non-tumor parenchyma.

FFPE samples from surgical specimens and biopsies of 7 pulmonary adenocarcinomas and 5 squamous cell carcinomas and respective metastasis together with normal lung tissue from the same case; these areas were separated by laser-capture microdissection prior to miRNA analysis.

The expression level of miR-21 by qRT-PCR was significantly higher in tumor tissues than in adjacent normal tissues ( $p = 0.005$ ). The overexpression in the metastasis samples compared to adjacent normal tissue was almost statistically significant ( $p = 0.051$ ).

MiR-21 was overexpressed in tumor tissues relative to adjacent non-tumor tissues. We found an increase in miR-21 expression in primary carcinoma and metastasis in pulmonary adenocarcinomas when compared with miR-21 lower expression in squamous cell carcinoma. Despite the small sample studied, further investigation may indicate therapeutic and prognostic relevance of

this determination, previous studies suggest that miR-21 and has a role in tumor growth, invasion and metastasis by targeting multiple suppressor genes [1]. Therefore, suppression of miR-21 may provide a novel approach for the treatment of advanced cancers through regulation of tumour suppressor genes.

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1. Zhu S, Wu H, Wu F, Nie D, Sheng S, Mo YY: MicroRNA-21 targets tumor suppressor genes in invasion and metastasis. *Cell Res* 2008, **18**:350-359.

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