

# Expression analysis of angiogenesis-related genes in Bulgarian patients with early-stage non-small cell lung cancer

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## ABSTRACT

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**Aims and background.** Angiogenesis is a key process in the early stages of tumor development. In this study we aimed to evaluate the expression of a panel of angiogenesis-related genes in a group of Bulgarian patients with early-stage non-small cell lung cancer (NSCLC).

**Methods and study design.** We analyzed the expression of 84 genes associated with the angiogenic process in 12 NSCLCs of two histological subtypes: 7 adenocarcinomas and 5 squamous cell carcinomas. Eight peripheral nontumorous tissues were used as controls. We performed real-time PCR on pathway-specific gene arrays (SABiosciences).

**Results.** Our pilot study identified upregulated genes in early-stage NSCLC including growth factors (*TGFA* and *EFNA3*), the adhesion molecule *THBS2*, cytokines and chemokines (*MDK*, *CXCL9*, *CXCL10*), and the serine protease *PLAU*. Several genes showed downregulation including one growth factor (*FIGF*), the receptors for growth factors *TEK* and *SIPRI* as well as adhesion molecules (*COL4A3* and *CDH5*), the cytokine *IL6*, the matrix protein *LEP* and the transcription factor *NOTCH4*. The study demonstrated deregulated genes specific for the two histological subtypes including the transcription factor *HAND2*, which was overexpressed in squamous cell carcinomas but not adenocarcinomas.

**Conclusions.** Despite the limited number of patients, our results demonstrated the potential of angiogenesis-related genes as biomarkers in the early stages of NSCLC development. Free full text available at [www.tumorionline.it](http://www.tumorionline.it)

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**Key words:** angiogenesis, expression, squamous cell carcinoma, adenocarcinoma.

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