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**Title:** Expression of RASGRF2 in non-small cell lung cancer and its effect of transfection on biological behavior of human NSCLC lines H1299

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**Body:** For RASGRF2 participating in H-ras signaling pathway, it has been identified as one of potential tumor suppressor genes. There are few reports on whether RASGRF2 plays a role in the pathogenesis of NSCLC. Our study was designed to explore the expression of RASGRF2 in NSCLC, and its effectiveness on clinical and pathological features. Furthermore, the effectiveness of RASGRF2 on the biological characteristics of NSCLC lines H1299 was considered. The expression of RASGRF2 was detected by SP in cancerous tissues and adjacent non-neoplastic tissues of 48 patients with NSCLC. Of 18 cases, mRNA were detected by RT-PCR.H1299 were transfected with RASGRF2-GFP. The effectiveness of RASGRF2-GFP on mitotic cycle and apoptosis of stable expression ones were evaluated by Flow Cytometry, and its proliferation were examined by MTS.The loss expression of RASGRF2 in cancerous tissues was 54%,but it was 88% in normal tissues($P<0.05$); The mRNA of RASGRF2 in normal tissues and cancerous tissues were 0.7834±0.35490 and 0.2236±0.12173, respectively($P<0.018$).There were no significant differences between the expression of RASGRF2 and gender, age, smoking status, histological types, classifications, lymph nodule metastasis and stages($P>0.05$). The mitotic cycle of transfected H1299, which had stable expression of RASGRF2-GFP, were found blocked at S stage, but the apoptosis and proliferation had no significant changes. The inactivation of RASGRF2 is an initial issue in the pathogenesis of lung cancer. Detecting RASGRF2 will help make a definite diagnosis of lung cancer in some extent. RASGRF2 may suppress the development of carcinoma by interfering mitotic cycle.