NeuroG1 Expression in Neuroendocrine Phenotype of A549 Lung Adenocarcinoma Cells

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Abstract:

NeuroG1 is a basic helix-loop-helix transcription factor involved in neural differentiation, which inhibits neural stem cells from astrocyte differentiation by its interaction with CBP-Smad1 and from gliogenesis by its interaction with STAT factors. NeuroG1 methylation has been reported in lung adenocarcinoma; furthermore, high NEUROG1 expression has been correlated with markedly shorter overall survival in a phase 2 trial for combination of camrelizumab, carboplatin and Nab-paclitaxel. Nevertheless, there are few reports for lung cancer and this transcription factor; in this study, we evidenced the differential expression of NeuroG1 in A549 lung adenocarcinoma cells treated with cAMP increasing agents, forskolin and IBMX. The treatment transdifferentiated A549 cells into a neuroendocrine phenotype, with neurite-like projections involving several transcription factors related to the neural differentiation, such as NEUROG1 as well as NEUROD1. The characterization of NEUROG1 as a possible biomarker for worse prognosis is important for the transdifferentiation can occur in lung adenocarcinoma under specific treatment conditions.