

# Functional Role of *CCND1* Gene Polymorphism in Modifying Susceptibility towards Lung Cancer Risk and Overall Survival of Lung Cancer Patients Treated with Double Platinum Chemotherapy in North Indian Population

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## Abstract—

**Background:** Number of studies done so far in different populations has shown that polymorphism within the *CCND1* gene play an important role in determining individual susceptibility towards lung cancer; however data so far obtained has been contradictory within the same or different populations. Few studies have focused on the synergistic effect of the *CCND1* polymorphisms towards susceptibility for lung cancer and also for different histological sub-types along with the impact of smoking. **Objectives:** To investigate the potential role of *CCND1* gene G870A polymorphism in the likelihood of development of lung cancer and overall survival of lung cancer patients in North Indian population. Cyclin D1 is encoded by *CCND1* gene which is present on 11q 13chromosome. Cyclin D1 is a key regulatory protein, playing an important role in the transition from the G1 phase to the S phase of the cell cycle. Cyclin D1 is essential for cell proliferation, differentiation and transcription **Material and methods:** Study consisted of 353 lung cancer cases and 351 age and gender matched healthy controls. PCR-RFLP was done for *CCND1* gene.

**Results:** The GA genotype was associated with an increased risk for overall lung cancer (odds ratio OR 1.63; P=0.01). Combined variant genotype Showed a significant association for overall lung cancer (OR 1.50; P=0.03). In addition smokers with carrier genotype of *CCND1* were found to have a significant (OR 1.57, P = 0.04) high risk for lung cancer. Kaplan-meier survival analysis showed a trend for variant and combined genotype surviving but there no significant difference was seen.

**Conclusion:** Here in our results suggest that polymorphic *CCND1* may increase the risk of lung cancer in smokers from north India and it may be associated with the overall survival. Further studies are also done to explore the underlying molecular mechanisms and to test the value of this gene polymorphism as a predictor for platinum sensitivity in lung cancer patients.

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