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Effects of an Extract of *Platycodon grandiflorum* on the Growth and Gene Expression of Human Lung Carcinoma NCI-H460 Cells

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Platycodi Radix, the root of *Platycodon grandiflorum* A. DC (Campanulaceae), commonly known as Doraji in Korea (Chinese name, 'Jiegeng', and Japanese name, 'Kikyo') has been used as an expectorant in traditional Oriental medicine. Several studies on its chemical and immunopharmacological effects including immunostimulation and antitumor activity have been performed. However, the relevant molecular mechanisms are poorly understood. In the present study, we investigated the effects of an aqueous extract from the roots of *P. grandiflorum* (AEPG) on the cell growth of human lung adenocarcinoma NCI-H460 cells in order to understand its anti-proliferative mechanism. AEPG treatment resulted in the inhibition of NCI-H460 cell proliferation and cell viability in a concentration-dependent manner as measured by MTT assay and hemocytometer counts. AEPG treatment induced morphological changes including as membrane shrinking and cell rounding up. The present results indicated that AEPG-induced inhibition of lung cancer cell proliferation is associated with the blockage of G1 phase progression through induction of Cdk inhibitors such as p16 and p27, and inhibition of cyclin D1 and Cdk6. In gene expression profiling experiment, although the precise roles of genes whose expression levels were found to fluctuate after AEPG treatment remain to be elucidated, we hope that the new view of gene expression in human lung carcinoma cells following AEPG exposure, as offered by this study, provides clues for the mechanism of AEPG action. Taken together, these findings suggest that *P. grandiflorum* has strong potential for development as an agent for prevention and treatment against human lung cancer.