RESISTANCES TO TYROSINE KINASE INHIBITORS IN LUNG CANCER

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Tyrosine kinase inhibitors (TKI) have emerged as important therapeutic agents in the treatment of several cancers including lung cancer. Despite having fewer side effects as compared to the traditional chemotherapy the use of these drugs has not been very beneficial to patients because of resistances. While only a small population of patients respond well to TKI, these patients eventually develop resistance to the drugs. Resistance to TKI can therefore be classified into two, as either primary or secondary resistance. In this study we sought to differentiate between primary and secondary resistance to TKI in lung cancer. Lung cancer cell lines were tested for viability, apoptosis and cell cycle after exposure to erlotinib and gefitinib. It emerged that cells with primary resistance showed similar cell cycle patterns to those with secondary resistance but differences were observed between the two groups in the viability and apoptosis assays. Viability tests revealed that erlotinib and gefitinib significantly ($P<0.05$) reduced cell growth in the parent cells but not in the resistant sub-cell lines and not in the secondary resistant cells ($P>0.05$).Cells in the apoptotic phase increased significantly in the parent cells lines ($P<0.05$) but not in the resistant cells. In the cell cycle analysis cell cycle arrest of the G0/G1 was observed in both, primary and secondary resistant cells but not the sensitive cells.