Abstract: We examined whether freshly isolated human bronchial cells (HBEC) and bronchial epithelial cell line/BEAS-2B cells expressed surface molecules required for APC function. These cells expressed CD40 and ICAM-1, but not B7-1, B7-2 or HLA-DR molecules. Treatment of these cells with IFN-\(\gamma\) resulted in enhanced expression of CD40 and ICAM-1 as well as induction of HLA-DR expression. Th2 cytokines such as IL-4 and IL-5, proinflammatory cytokine of GM-CSF and nonspecific activator endotoxin had no effect on these phenotypic expressions. Functional examinations showed that allogeneic lymphocytes purified from peripheral blood strongly proliferated in response to BEAS-2B cells cultured with IFN-\(\gamma\), but only weakly compared with those without IFN-\(\gamma\). When allogeneic lymphocytes were purified to CD4+ cells, the proliferative response against BEAS-2B cells was abolished. Blockade of CD40-CD40L interaction by anti-CD40 antibody also inhibited the proliferation of lymphocytes to BEAS-2B cells, although this treatment showed a minimum effect on the response to allogeneic MNC. Thus, bronchial epithelial cells have the ability to present allogeneic antigens to T cells in both CD40- and IFN-\(\gamma\)-dependent manners under the presence of third party cells that transduce co-stimulatory signals. J. Med. Invest. 48: 109-117, 2001

Keywords: bronchial epithelial cells, APC, T cells, CD40, IFN-\(\gamma\)
Reagents and Cell lines

Isolation of Human Bronchial Epithelial cells (HBEC)

Isolation and purification of lymphocytes and CD4 cells

Culture of HBEC

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Analysis by flow microfluorometry

**Measurement of T cell proliferation**

**Expression of CD40 molecules on bronchial epithelial cells and the enhancement by IFN-γ**

**Induction of HLA-DR expression on bronchial epithelial cells by IFN-γ**
Expression of co-stimulatory molecules other than CD40 on bronchial epithelial cells and the regulation by IFN-γ

Selective requirement of IFN-γ for the expression of HLA-DR antigen on BEAS-2B cells

Allogeneic lymphocytes, but not purified CD4+ cells, proliferated in response to BEAS-2B cells stimulated with IFN-γ
Effect of anti-CD40 mAb on the proliferation of T cells to BEAS-2B cells
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APC function of bronchial epithelial cells
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