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Ectopic expression of the membrane-bound form of IL-17A promotes the growth and tumorigenicity of cancer cells

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Interleukin-17A is a member of the IL-17 family, and is known as CTLA8 in the mouse. It is produced by T lymphocytes and NK cells and has proinflammatory roles, inducing cytokine and chemokine production. However, its role in tumor biology remains controversial. We investigated the effects of locally produced IL-17A by transferring the gene, encoding it into mouse tumor cells including B16 melanoma, and MethA fibrosarcoma, either in a secretory or a membrane-bound form. Expression of the membrane-bound form on CT26 colon cancer cells dramatically enhanced their proliferation in *in vitro*. The enhanced growth was shown to be due to an increased rate of cell cycle progression. After synchronizing cells by adding and withdrawing colcemid, the rate of cell cycle progression in the cells expressing the membrane-bound form of IL-17A was much faster than that of the control cells. Both secretory and membrane-bound IL-17A induced the expression of Sca-1 on the cancer cells, which is commonly associated with aggressive phenotype of cancer cells. When tumor clones were grafted into syngeneic BALB/c mice, the tumor clones expressing the membrane-bound form IL-17A grew rapidly; those expressing the secretory form also grew faster than the wild type CT26 cells, but slower than the clones expressing the membrane-bound form. These results indicate that IL-17A promotes tumorigenicity, in part, by enhancing cell cycle progression. This finding should be considered in treating tumors and immune-related diseases.

Biography

Young Sang Kim is a Professor in Biochemistry Department in Chungnam National University, finished his PhD at University of Illinois at Chicago and continued Post-doctoral Research at Yale University for 2 years. His research interests focus is to develop a strategy for selective activation of tumor associated antigen (TAA)-specific cytotoxic T lymphocytes. He evaluates anti-tumor effect of tumor cell vaccines engineered to express cytokines on tumor cell surface as a membrane-bound form instead of the secretory form. In this way, he expects that the membrane-bound form of cytokine on tumor cells may function as a co-stimulatory molecule to TAA-specific cytotoxic T lymphocytes. He has published more than 70 scientific papers in the last 20 years.

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