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Characterization of cytokine production and *in vivo* antitumor activity of human cytokine-induced killer cells to human liver cancer

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Abstract

Cytokine-induced killer (CIK) cells are *ex vivo* expanded T cells with natural killer cell phenotypes and functions. In this study, the anti-tumor activity of CIK cells against hepatocellular carcinoma was evaluated *in vitro* and *in vivo*. In the presence of anti-CD3 antibody and IL-2 for 14 days, human peripheral blood mononuclear cell population changed to heterogeneous CIK cell population, which comprised 96% $CD3^+$, 3% $CD3^-$ $CD56^+$, 32% $CD3^+CD56^+$, 11% $CD4^+$, 75% $CD8^+$, and 30% $CD8^+CD56^+$. CIK cells produced significant amounts of IFN-γ and TNF-α; however, produced only slight amounts of IL-2, IL-4, and IL-5. At an effector-target cell ratio of 30:1, CIK cells destroyed 33% of SNU-354 human hepatocellular carcinoma cells, which was determined by the ^{51}Cr-release assay. In addition, a dose of 1 x 10^6 CIK cells per mouse inhibited 60% of SNU-354 tumor growth in irradiated nude mice. This study suggests that CIK cells may be used as an adoptive immunotherapy for patients with hepatocellular carcinoma.

Key words; Cytokine-induced killer cells, Hepatocellular carcinoma, Adoptive immunotherapy