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Antigen-Presenting Cell Characteristics of Human γδ T Lymphocytes in Chronic Myeloid Leukemia

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Abstract : Human Vγ9Vδ2 T lymphocytes are regarded as promising effector cells for cancer immunotherapy since they have the ability to eliminate several tumor cells through non-peptide antigen recognition and non-major histocompatibility complex (MHC) restriction. An issue of recent interest is the capability to activate γδ T cells by use of a group of drugs, such as pamidronate, that cause accumulation of phosphoantigen which is recognized by γδ T cell receptors. Moreover, their antigen presenting cell-like phenotype and function have been confirmed in many clinical trials. In this study, Vγ9Vδ2 T cells derived from normal peripheral blood mononuclear cells were activated with pamidronate and the expanded Vγ9Vδ2 T cells can recognize and kill chronic myeloid leukemia (CML) cells treated with pamidronate through their cytotoxic activity. To support the strong role played by Vγ9Vδ2 T cells against cancer, we provide the evidence that Vγ9Vδ2 T cells activated with CML cell lysate antigen can efficiently express antigen presenting cell (APC) phenotype and function. In conclusion, pamidronate can be used in intentional activation of human Vγ9Vδ2 T cells and can increase the susceptibility of CML cells to cytotoxicity of Vγ9Vδ2 T cells. The activated Vγ9Vδ2 T cells by cancer cells lysate can show their APC characteristics, and so greatly increase the interest in exploring their therapeutic potential in hematologic malignancy.

Keywords : γδ T lymphocytes, antigen-presenting cells, chronic myeloid leukemia, cancer, immunotherapy
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