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Cancer immunotherapy using antigenic peptides of tumor-associated antigen L6

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Tumor associated antigen L6 (TAL6) is over-expressed in some epithelial cancer cells. We found that more than 80% of breast and lung cancer tissue highly expressed TAL6 as compared to adjacent normal breast tissue. To identify CTL epitopes from TAL6, we synthesized 18 peptides for the HLA-A2 binding assay based on the MHC-binding motif using four computer prediction programs. Positive binders identified by ELISA were immunized in HLA-A2 transgenic (A2 Tg) mice. One peptide induced cytolytic CD8+ T cell responses and inhibits the growth of TAL6-positive tumors (EL4/TAL6/HLA-A2) in A2 Tg mice but not in wild type mice. These results demonstrate that the TAL6-derived CTL epitope could induce HLA-A2-restricted immunity against TAL6-expressing tumor cells. Furthermore, we evaluated human CTL epitope-induced anti-tumor effects in human lung cancer xenograft models. TAL6 derived peptides strongly inhibited tumor growth, cancer metastasis and prolonged survival time in A2 Tg mice immunized with a formulation of T-helper (Th) peptide, synthetic CpG ODN and adjuvant Montanide ISA-51 (ISA-51). Adoptive transfer of peptide-induced CTL cells from A2 Tg mice into human tumor xenograft SCID mice significantly inhibited tumor growth. The combination of CTL-peptide immunotherapy and gemcitabine additively improved the therapeutic effects. This pre-clinical evaluation model provides a useful platform to develop efficient immunotherapeutic drugs to treat cancer and demonstrates a promising strategy with a benefit of antitumor immune responses worthy of further development in clinical trials.

Biography

Yuh-Pyng Sher has completed her PhD in Cancer Research from National Taiwan University at 2006. She has completed her Postdoctoral studies from Center for Molecular Medicine in China Medical University Hospital. Presently, she is an Associate Professor in China Medical University and a Deputy Director in Research Center for Chinese Herbal Medicine in China Medical University. She has published more than 30 papers in reputed journals and has two patents. Her lab is focused on cancer translational medicine study to develop promising cancer treatments for clinical application.

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