Induction of anti-tumor immunity by human telomerase reverse transcriptase (hTERT) and viral-derived peptides in breast cancer mouse models

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Abstract

Human telomerase reverse transcriptase (hTERT) is the most common tumor-associated antigen (TAA) and its activity is upregulated in more than 90% of cancers. Therefore, its targeting can be used in cancer immunotherapy. In continuing with our previous study, we evaluated hTERT derived peptides conjugated to KLH in mice breast cancer models. To induce tumors in Balb/C mice, about 5 × 10 5 mice breast cancer 4T1 cell were washed and suspended in 100 µl sterile PBS and subcutaneously (s.c) injected to 4th mammary fat pat of 6–8 weeks old mice. Thereafter, tumor size measurements were taken two times a week. About 100 ug KLH conjugated peptides accompanied by Incomplete Freund′s adjuvant (IFA) were injected s.c on days 10th and 20th after cancer cells inoculation. In spite of their significantly lower immunogenicity and affinities on mice HLA compared to human (approximately 5–30 times), these peptides inhibited tumor growth as well as being able to increase the overall survival of vaccinated Balb/C mice compare untreated group.

Key words hTERT, MHC, Peptide-based vaccine, Viral peptide, Cancer immunotherapy