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Neoepitopes as personalized cancer vaccines

Hakimeh Ebrahimi Nik
University of Connecticut School of Medicine, USA

It is now well known that cancer is not only patient-specific but inherently specific to the single tumor itself. Some of new epitopes (neoepitopes), raised from tumor somatic mutations, are uniquely identifiable fingerprints by which immune system differentiate cancer from normal cells. Using the potential of neoepitopes to stimulate the adaptive immune response against tumor, this tool has been recently considered as putative personalized cancer vaccine. By means of a bona fide neoepitope which causes 100% tumor rejection in BALB/c fibrosarcoma tumor model, we revealed some of important challenges of neoepitope immunization. We observed that a successful neoepitope immunization depends on flanking sequences, length and dosing of the peptide as well as the organism age. Surprisingly, we found out that the current CD8 T cell responses are not sufficient to determine the efficacy of neoepitopes and the choice of adjuvants may have profound consequences on the course of cancer progression. These findings have strong implications for neoepitope-based human cancer immunotherapy.

Biography

Hakimeh Ebrahimi-Nik has completed her doctorate of veterinary medicine at the age of 24 years from Ferdowsi University of Mashhad. She is currently pursuing her PhD of Biotechnology and at the same time is a post doctoral fellow in the lab of Dr. Pramod K. Srivastava, Department of Immunology, and Carole and Ray Neag Comprehensive Cancer Center, University of Connecticut School of Medicine.

ebrahiminik@uchc.edu

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