

# HLA-A2-restricted IL-13Ra2/EphA2/Survivin/Tetanus Toxoid T-helper Epitopes-Montanide 51 Vaccine

National Cancer Institute

## Source

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A peptide vaccine comprised of synthetic human leukocyte antigen (HLA)-A2-restricted peptides derived from the tumor-associated antigens (TAAs) interleukin-13 receptor alpha-2 (IL-13Ra2), the tyrosine kinase receptor Ephrin receptor A2 (EphA2), and the apoptosis inhibitor protein survivin, combined with the adjuvant tetanus toxoid (TT)-derived helper T-cell peptide, and emulsified in the immunoadjuvant Montanide ISA-51, with potential immunostimulating and antineoplastic activities. Specifically, this vaccine contains the epitopes: IL-13Ra2 345-353:1A9V, which is an engineered peptide based on amino acids 345-353 of IL-13Ra2 where the amino acids at the first and ninth positions of the peptide have been replaced with alanine and valine, respectively, EphA2 883-891, and survivin 96-104. Upon administration, the HLA-A2-restricted IL-13Ra2/EphA2/survivin/TT T-helper epitopes-Montanide 51 vaccine may stimulate a HLA-A2-restricted cytotoxic T-lymphocyte (CTL) response against tumor cells that overexpress IL-13Ra2, EphA2, or survivin, and results in tumor cell lysis. TT T-helper peptide binds to class II major histocompatibility molecules (MHC) molecules as a nonspecific vaccine helper epitope, resulting in long-term immunopotentiality by increasing the helper T-cell response. Montanide ISA-51, a stabilized water-in-oil emulsion adjuvant containing mineral oil with mannide monooleate added as a surfactant, non-specifically stimulates cell-mediated immune responses to antigens. IL-13Ra2, EphA2 and survivin, TAAs that are overexpressed in certain tumor cell types, play key roles in tumor cell proliferation. HLA-A2 presents antigenic peptides to CD8+ T-cells; epitope design restricted to epitopes that bind most efficiently to HLA-A2 may improve peptide immunogenicity.