Anti-CD19-CAR-CD3zeta-4-1BB-Expressing Allogenic Natural Killer Cells

National Cancer Institute

Source

National Cancer Institute. Anti-CD19-CAR-CD3zeta-4-1BB-Expressing Allogenic Natural Killer Cells. NCI Thesaurus. Code C112179.

Allogeneic natural killer (NK) cells transduced with an mRNA expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) and the zeta chain of the TCR/CD3 complex (CD3-zeta), coupled to the signaling domain of 4-1BB (CD137), with potential immunomodulating and antineoplastic activities. NK cells from haploidentical donors are expanded in culture and electroporated with the CAR mRNA. Upon transfusion of the transduced cultured cells, CD19CAR-CD3zeta-4-1BB-expressing allogeneic NK cells bind to and induce selective cytotoxicity in CD19-expressing tumor cells. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19. Its inclusion may also increase antitumor activity, when compared to the inclusion of the CD3-zeta chain alone. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies.