The natural killer (NK), T and B lymphocyte antigen (NTB-A) is a 60-kDa transmembrane glycoprotein of the CD2 family expressed on all human resting and activated NK, T and B cells. This antigen is not expressed on monocytes, neutrophils, and basophils but is expressed on eosinophils. The NTB-A antigen is a 331 amino acid protein which belongs to the immunoglobulin (Ig) superfamily. It is characterized, in its 225 amino acid extracellular domain, by one distal V-type domain without disulfide bond and two proximal C2-type domains, and in its 83 amino acid cytoplasmic domain by three tyrosine residues. One of these residues is part of an immunoreceptor tyrosine-based switch motif (ITSM) and the other two are parts of immunoreceptor tyrosine-based activation motif (ITAM) consensus (TyYxxV/I).

The NTB-A gene maps to chromosome 1q13 and encodes a single-pass transmembrane protein (SAP) or SH2D1A, and the Ewing’s sarcoma family (CD48, CD58 (LFA-3), CD84, CD150, CD229, CRACC and BLAME). NTB-A is a homotypic ligand through an homophilic binding (3).

Using normal NK cells in redirected killing assays shows that NTB-A acts as an activating coreceptor as the NTB-A responsiveness is correlated to the surface expression of the CD28 – CD80 interaction and induces polarization toward a Th1 phenotype (2). Proliferation and cytokine production were found to be dependent on the CD28 – CD80 interaction and induced polarization toward a Th1 phenotype (2). NK cells treated with CD28 antibodies show an increased production of TNF and IFN-γ and a decreased production of IL-10. The magnitude of this response varies depending on the reagent used.

The molecular analysis of NTB-A signaling reveals a two-step mechanism. In the first step, resulting from the homophilic interaction of NTB-A with neighboring cells, the tyrosines of the NTB-A antigen are partially phosphorylated and are associated with two-adaptor proteins, the signaling lymphocyte-activation molecule (SLAM)–associated adaptor protein (SAP) or SH2D1A, and the Ewing’s sarcoma family (CD48, CD58 (LFA-3), CD84, CD150, CD229, CRACC and BLAME). NTB-A is a homotypic ligand through a homophilic binding (3).

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Histogram 2:
CD3–FITC versus CD56–PC5 gated on lymphocytes (A region), represents the expression of both the CD56 and the CD3 on lymphocytes. A rectilinear region (B) is set around the CD3– CD56+ lymphocytes which represent the NK cells.

Histogram 3:
Anti-NTB-A-PE versus CD56–PC5, gated on A and B regions, shows NTB-A expression on NK cells.

SELECTED RESEARCH REFERENCES

PRODUCT AVAILABILITY
IOTest Anti-NTB-A-PE Conjugated Antibody
PN A40926 – 1 mL Liquid – 50 tests – 20 µL / test.
PE is licensed under patent 4,520,110

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