SPECIFICITY

The CD10 antigen was originally depicted as the common acute lymphoblastic leukemia antigen (CALLA) (for reviews see refs 1 - 3). It was found latter on to be identical to the neural endopeptidase 24.11 (NEP) (4, 5). It is a type II integral transmembrane metallo endopeptidase (5). CD10 is glycoprotein (2). CD10 is physiologically expressed on uncommitted progenitor cells of the lymphoid lineage, and on progenitors committed to the earliest stages of B cell differentiation (2). CD10 is also expressed on terminally differentiated neutrophils, as well as on bone marrow stromal cells. The CD10/NEP biologic function is not restricted to the hematopoetic development, as indicated by its presence on different cell types of epithelial origin, such as brush border cells of kidney and gut, myoepithelial cells of adult breast, and bronchial epithelial cells (9). The CD10 molecular weight is about 100 kDa when expressed on lymphoid progenitors. The antigen shows a slightly higher molecular weight (~110 kDa) when expressed on neutrophils, (6), and a lower molecular weight (~90 kDa) when expressed on renal epithelial cells or fibroblasts (6, 7). Evidence also indicated that the molecular weight of neutrophil CD10 may vary between donors (8). Tissue- and donor-specific differences in CD10 molecular weight are supposed to be related to different glycosylation patterns of the 6 potential N-linked glycosylation sites in the extracellular domain of the molecule. The CD10/NEP intracytoplasmic tail contains recognition sites for a serine-threonine kinase named casein kinase II (CKII) (9). CD10/NEP can be phosphorylated by CKII and co-associates with additional tyrosine phosphatases including Lyn (9). CD10/NEP is a protease that acts in the outer membrane cellular area. The CD10-bearing cells can self-reduce their response to peptide hormone by regulating local peptide concentrations (1).

Other known members of this family of enzymes, within the human hematopoiesis, are CD13/aminopeptidase N (APN), CD26/dipeptidyl peptidase IV (DPP IV) (2), and carboxypeptidase M (CPM) (10). CD10 and CD13 extracellular domains contain an active zinc binding site of three amino acids (aa), separated by a two-aa spacer (His-Glu-Leu-Tyr-His) (2). This site is associated with catalytic activity in a variety of cell surface and secreted zinc-dependent metalloproteases (2). CD10 can hydrolyze a number of substrates by cleavage of small peptides on the Nh2 terminal side of hydrophobic amino acids.

Depending on the carrying cell type, substrates of CD10/NEP include chymotrypsin-like peptides Met-Leu-Pha (MLP), substrates P(atial) naturfuektor, endothelin, neurelin, oxytocin, bradikinin, angiotensin 1 and 2, the bombesin-like peptides and the opioid peptides met- and leu-enkephalin (2).

Little is known concerning CD10/NEP function in human lymphoid development. In murine models, inhibition of CD10 has been shown to increase the proliferation and maturation of splenic B cells (11), suggesting that CD10/NEP regulates B-cell ontogeny by hydrolyzing a peptide substrate that stimulates B-cell proliferation and/or differentiation.

For cleavage of certain inflammatory peptides such as MLP, CD10/NEP works in conjunction with CD13/APN, resulting in limitation of neutrophil inflammation responses (2, 12, 13). Increase in the density of membrane expression of CD10/NEP on neutrophils may occur within minutes in response to the human anaphylatoxins C5a (14). CD10 may also cooperate with CD13 and CPM on lymphoid and myeloid cells to regulate biologic activity of peptide hormones on leukocytes (10).

The ALB1 monoclonal antibody (mAb) reacts with less than 2% of Ficol separated normal bone marrow cells (15). It reacts modestly with resting neutrophils but does not react with eosinophils, neither with basophils, reticulocytes, erythrocytes, platelets and mononuclear cells from normal peripheral blood.

The ALB1 mAb was studied during the 1st International Workshop on Human Leukocyte Differentiation Antigens held in Paris, France, in 1864 (15).

REAGENT

Clone ALB1
Isotype IgG1, mouse
Immunogen Leukemic cells
Hybridoma NS1 x Balb/c
Source Ascites fluid
Purification Ion exchange or affinity chromatography
Conjugation and mucosal hyophosphocin (APC) is conjugated at 0.5 - 1.5 moles of APC per mole of Ig. Excitation wavelength: 653 - 653 nm Maximum emission wavelength: 665 nm Main emission color: Red
Limitation: APC conjugates are recommended for use only on flow cyrometers equipped with an exciting source of 533 nm (He-Ne laser) or 633 nm (Red diode laser).
Buffer 2 mg/ml bovine serum albumin in phosphate-buffered saline containing 0.1% sodium azide.

APPLICATION


STATEMENT OF WARNINGS

1. This reagent contains 0.1% sodium azide. Sodium azide under acid conditions yields hydrazic acid, an extremely toxic compound. Azide compounds should be flushed with running water while being discarded. These precautions are recommended to avoid deposits in metal piping in which explosive conditions can develop. If skin or eye contact occurs, wash excessively with water.

2. Specimens, samples and all material coming in contact with them should be handled as if capable of transmitting infection and disposed of with proper precautions.

3. Never pour by mouth and avoid contact of samples with skin.

4. Do not use antibody beyond the expiration date on the label.

5. Do not expose reagents to strong light during storage or incubation.

6. Avoid microbial contamination of reagents or incorrect results might occur.

STORAGE CONDITIONS AND STABILITY

Each reagent is stable up to the expiration date when stored at 2 - 8°C. Do not freeze. Minimize exposure to light.

REAGENT PREPARATION

No reconstitution is necessary. This monoclonal antibody may be used directly from the vial. Bring reagent to 15 - 25°C prior to use.

PROCEDURE

This reagent is designed for Flow Cytometry. 

Assay volume: 10 μL per 5 x 10⁶ cells in one test, or per 100 μL whole blood.

A wash is required to yield optimal results.

EXAMPLE DATA

The histogram below is a monoparametric representation (Count versus Fluorescence Intensity) of the NAMALWA cell line. Staining 3833EX100001 Ver. 01/28/1001 AC-01-1651
PN IM3633 CD10-APC (ALB1)

100 tests
10 µL / test

For Research Use Only. Not For Use In Diagnostic Procedures.

is with CD10-APC (PN IM3633) monoclonal antibody. Isotypic
control labeling (PN IM2475) is represented in white.

Acquisition is with a BD Biosciences FACSCalibur™ flow cytometer
equipped with CELLQuest™ software. Analysis is with EXPO 32™
Cytometer software.

NAMALWA CELL LINE

CD10-APC

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IMMUNOTECH
A COULTER COMPANY

130, avenue de Lettre de Tassigny B.P. 177 13276 MARSEILLE Cedex 9 (FRANCE)
Tel : (33) 4 91 17 27 00 - Fax : (33) 4 91 41 43 58 - e-mail : abmarket@immunotech.fr