

IOTest® CD22-PE

REF IM1835
100 tests; 2 mL
20 µL / test



IOTest
Conjugated Antibody

IVD



ENGLISH	Specifications
Specificity	CD22
Clone	SJ10.1H11
Hybridoma	SP2/O x Balb/c
Immunogen	Human NALM1 cell line
Immunoglobulin	IgG1
Species	Mouse
Source	Ascites
Purification	Protein A affinity chromatography
Fluorochrome	Phycoerythrin (PE)
λ excitation	488 nm
Emission peak	575 nm
Buffer	PBS pH 7.2 plus 2 mg / mL BSA and 0.1% NaN ₃

USE

This fluorochrome-conjugated antibody permits the identification and numeration of cell populations expressing the CD22 antigen present in human biological samples by means of flow cytometry.

PRINCIPLE

This test is based on the ability of specific monoclonal antibodies to bind to the antigenic determinants expressed by leucocytes.

Specific staining of the leucocytes is performed by incubating the sample with the IOTest reagent. The red cells are then removed by lysis and the leucocytes, which are unaffected by this process, are analyzed by flow cytometry.

The flow cytometer measures light diffusion and the fluorescence of cells. It makes possible the delimitation of the population of interest within the electronic window defined on a histogram, which correlates the orthogonal diffusion of light (Side Scatter or SS) and the diffusion of narrow-angle light (Forward Scatter or FS). Other histograms combining two of the different parameters available on the cytometer can be used as aids in the electronic gating stage depending on the application chosen by the user.

The fluorescence of the delimited cells is analyzed in order to distinguish the positively-stained events from the unstained ones. The results are expressed as a percentage of positive events in relation to all the events acquired by the electronic gating.

EXAMPLES OF CLINICAL APPLICATIONS

The CD22 antigen is detected in the cytoplasm early during B cell ontogeny (late pro-B stage), appears on the cell surface simultaneously with the expression of membranous IgD, and is found on most mature B lymphocytes (1, 2). CD22 antigen is lost during the terminal stages of differentiation prior to the plasma cell stage (1). On peripheral whole blood, the expression of CD22 antigen is restricted to B lymphocytes. Furthermore, the CD22 antigen is useful in the phenotyping of most B-cell leukemias and nearly all B-cell lymphomas in combination with other markers (3). Furthermore, CD22 antigen, in association with the CD11c antigen, represents a unique marker for hairy cell leukemia (HCL) although neither is specific for that disease (4, 5). The HCL cases demonstrated a unique CD22+CD11c fluorescence histogram pattern that is characterized by uniformly intense CD11c and CD22 fluorescence.

STORAGE AND STABILITY

The conjugated liquid forms must be kept at between 2 and 8°C and protected from light, before and after the vial has been opened.

Stability of closed vial: see expiry date on vial.

Stability of open vial: the reagent is stable for 90 days.

PRECAUTIONS

1. Do not use the reagent beyond the expiry date.
2. Do not freeze.
3. Let it come to room temperature (18 – 25°C) before use.
4. Minimize exposure to light.
5. Avoid microbial contamination of the reagents, or false results may occur.
6. Antibody solutions containing sodium azide (NaN₃) should be handled with care. Do not ingest and avoid contact with the skin, mucosa and eyes. Moreover, in an acid medium, sodium azide can form the potentially dangerous hydrazoic acid. If it needs to be disposed of, it is recommended that the reagent be diluted in a large volume of water before pouring it into the drainage system so as to avoid the accumulation of sodium azide in metal pipes and to prevent the risk of explosion.
7. All blood samples must be considered as potentially infectious and must be handled with care (in particular: the wearing of protective gloves, gowns and goggles).
8. Never pipette by mouth and avoid all contact of the samples with the skin, mucosa and eyes.
9. Blood tubes and disposable material used for handling should be disposed of in ad hoc containers intended for incineration.

SAMPLES

Venous blood or bone marrow samples must be taken using sterile tubes containing an EDTA salt as the anticoagulant. The use of other anticoagulants is not recommended.

The samples should be kept at room temperature (18 – 25°C) and not shaken. The samples should be homogenized by gentle agitation prior to taking the test sample.

The samples must be analyzed within 24 hours of venipuncture.

METHODOLOGY

NECESSARY MATERIAL NOT SUPPLIED

- Sampling tubes and material necessary for sampling.
- Automatic pipettes with disposable tips for 20, 100 and 500 µL.
- Plastic haemolysis tubes.
- Calibration beads. For example: Flow-Set™ Fluorospheres (Ref. 6607007).
- Red cell lysis reagent with washing stage after lysis. For example: VersaLyse™ (Ref. A09777).
- Leucocyte fixation reagent. For example: IOTest 3 Fixative Solution (Ref. A07800).

- Isotypic control: IOTest reagent. IgG1-PE (Ref. A07796).
- Buffer (PBS: 0.01 M sodium phosphate; 0.145 M sodium chloride; pH 7.2).
- Centrifuge.
- Automatic agitator (Vortex type).
- Flow cytometer.

PROCEDURE

NOTE: The procedure below is valid for standard applications. Sample and/or VersaLyse volumes for certain Beckman Coulter applications may be different. If such is the case, follow the instructions on the application's technical leaflet. For each sample analyzed, in addition to the test tube, one control tube is required in which the cells are mixed in the presence of the isotypic control (Ref. A07796).

1. Add 20 µL of specific IOTest conjugated antibody to each test tube, and 20 µL of the isotypic control to each control tube.
2. Add 100 µL of the test sample to the 2 tubes. Vortex the tubes gently.
3. Incubate for 15 to 20 minutes at room temperature (18 – 25°C), protected from light.
4. Then perform lysis of the red cells, if necessary, by following the recommendations of the lysis reagent used. As an example, if you wish to use VersaLyse (Ref. A09777), refer to the leaflet and follow preferably the procedure called "with concomitant fixation", which consists of adding 1 mL of the "Fix-and-Lyse" mixture prepared extemporaneously. Vortex immediately for one second and incubate for 10 minutes at room temperature, protected from light. If the sample does not contain red cells, add 2 mL of PBS.
5. Centrifuge for 5 minutes at 150 x g at room temperature.
6. Remove the supernatant by aspiration.
7. Resuspend the cell pellet using 3 mL of PBS.
8. Repeat step 5.
9. Remove the supernatant by aspiration and resuspend the cell pellet using:
 - 0.5 mL or 1 mL of PBS plus 0.1% of formaldehyde if the preparations are to be kept for more than 2 hours and less than 24 hours. (A 0.1% formaldehyde PBS can be obtained by diluting 12.5 µL of the IOTest 3 Fixative Solution (Ref. A07800) at its 10X concentration in 1 mL of PBS).
 - 0.5 mL or 1 mL of PBS without formaldehyde, if the preparations are to be analyzed within 2 hours.

NOTE: In all cases, keep the preparations between 2 and 8°C and protected from light.

PERFORMANCE

SPECIFICITY

The CD22 is a single chain, type I transmembrane molecule with a molecular weight of 130-140 kDa composed by 7 Immunoglobulin-like (Ig-like) domains (1). Because these domains, pertaining to the immunoglobulin superfamily (IgSF), show sialic acid binding proteins properties, CD22 is, like CD33 and the myelin-associated glycoprotein (MAG), a member of the sialoadhesin family (6). The N-terminal domain distal to the membrane is a V-type Ig domain whereas the other 6 domains proximal to the membrane are C2-type Ig domains (6). The cytoplasmic domain of CD22 includes 6 tyrosines that are possible targets for phosphorylation. Some regions of the intracytoplasmic tail present homology to the ITAM (Immunoreceptor Tyrosine-based Activation Motifs) and some others with the ITIM (Immunoreceptor Tyrosine-based Inhibition Motifs) (6, 7).

CD22 appears constitutively associated with the BCR (B Cell antigen Receptor) and this may involve CD22 recognition of mlgM carbohydrate determinants (8 – 10). The CD22 mediates adhesion of B cells with B or T lymphocytes, erythrocytes or leucocytes interactions (6, 9, 11, 12).

SJ10.1H11 monoclonal antibody was assigned to the CD22 at the 2nd HLDA Workshop on Human Leukocyte Differentiation Antigens in Boston, USA, in 1984 (WS code: B40, Section: B cells) (13).

LINEARITY

To test the linearity of staining of this reagent, a positive cell line (DAUDI) and a negative cell line (FRN17.4.14.33) were mixed in different proportions with a constant final number of cells, so that the positive / negative cell line ratio of the mixture ranged from 0 to 100%.

Aliquots were stained using the procedure described above and linear regression between the expected values and the observed values was calculated.

Specificity	Linear regression	Linearity (R ²)
CD22	Y = 1.0032 X + 0.7976	0.9994

EXPECTED VALUES

Each laboratory must compile a list of reference values based upon a group of healthy donors from the local population. This must be done by taking age, sex and ethnic group into account, as well as any other potential regional differences.

In our laboratories, the whole blood samples of 20 healthy adults were used. The results obtained for the count of the positive events of interest are given in the tables below:

Lymphocytes	Number	Mean (%)	SD	CV (%)
CD22 ⁺	20	11.20	2.75	24.55

INTRA-LABORATORY REPRODUCIBILITY

On the same day and using the same cytometer, 12 measurements of the positivity of a sample containing positive cells (peripheral blood from the same donor) were carried out. The results obtained are summarized in the following table:

Lymphocytes	Number	Mean (%)	SD	CV (%)
CD22 ⁺	12	9.07	0.75	8.23

INTER-LABORATORY REPRODUCIBILITY

On the same day and on the same sample containing positive cells (peripheral blood from the same donor), 12 measurements of the positivity were carried out by two technicians and the preparations analyzed using two different cytometers. The results obtained are summarized in the following tables:

Cytometer n° 1:

Lymphocytes	Number	Mean (%)	SD	CV (%)
CD22 ⁺	12	9.07	0.75	8.23

Cytometer n° 2:

Lymphocytes	Number	Mean (%)	SD	CV (%)
CD22 ⁺	12	9.99	0.19	1.91

LIMITATIONS OF THE TECHNIQUE

1. Flow cytometry may produce false results if the cytometer has not been aligned perfectly, if fluorescence spillover have not been correctly compensated for and if the regions have not been carefully positioned.
2. It is preferable to use a RBC lysis technique with a washing step as this reagent has not been optimized for "no wash" lysis techniques.
3. Accurate and reproducible results will be obtained as long as the procedures used are in accordance with the technical insert leaflet and compatible with good laboratory practices.
4. The conjugated antibody of this reagent is calibrated so as to offer the best specific signal/non-specific signal ratio. Therefore, it is important to adhere to the reagent volume/sample volume ratio in every test.
5. In the case of a hyperleucocytosis, dilute the specimen in PBS so as to obtain a value of approximately 5×10^9 leucocytes/L.
6. In certain disease states, such as severe renal failure or haemoglobinopathies, lysis of red cells may be slow, incomplete or even impossible. In this case, it is recommended to isolate mononucleated cells using a density gradient (Ficoll, for example) prior to staining.

MISCELLANEOUS

See the Appendix for examples and references.

TRADEMARKS

The BECKMAN COULTER logo, Beckman Coulter, Flow-Set, IOTest and VersaLyse are registered trademarks of Beckman Coulter, Inc.

MANUFACTURED BY:

IMMUNOTECH
 a Beckman Coulter Company
 130 avenue de Lattre de Tassigny
 B.P. 177 – 13276 Marseille Cedex 9
 France
 Customer Services: (33) 4 91 17 27 27

www.beckmancoulter.com



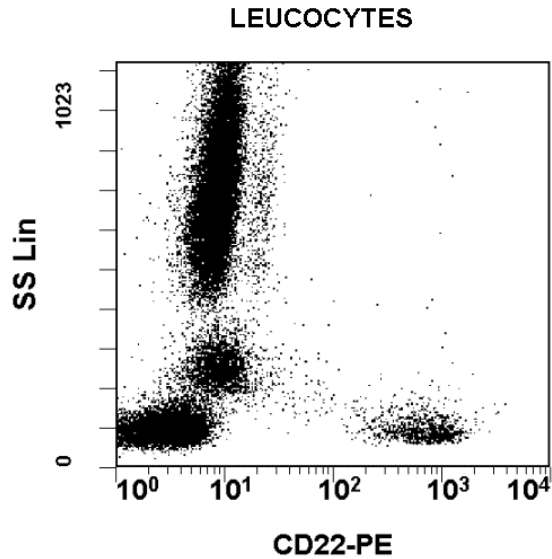
APPENDIX TO REF IM1835

EXAMPLE

The graph below is a biparametric representation (Side Scatter versus Fluorescence Intensity) of a lysed normal whole blood sample. Staining is with IOtest CD22-PE Conjugated Antibody (Ref. IM1835).

All leucocytes are represented.

Acquisition and analysis are performed with a CYTOMICS FC 500 flow cytometer equipped with CXP Software



REFERENCES

1. Kehrl, J., "CD22 workshop Panel report", 1995, Leucocyte Typing V, White Cell Differentiation Antigens. Schlossman, S.F., et al., Eds., Oxford University Press, 523-527.
2. Deneys, V., Mazzon, AM., Marques, JL., Benoit, H., De Bruyere, M., "Reference values for peripheral blood B-lymphocyte subpopulations: a basis for multiparametric immunophenotyping of abnormal lymphocytes", 2001, J Immunol Methods, 1; 253, 1-2, 23-36.
3. Sanchez, ML., Almeida, J., Vidriales, B., Lopez-Berges, MC., Garcia-Marcos, MA., Moro, MJ., Corrales, A., Calmuntia, MJ., San Miguel, JF., Orfao, A., "Incidence of phenotypic aberrations in a series of 467 patients with B chronic lymphoproliferative disorders: basis for the design of specific four-color stainings to be used for minimal residual disease investigation", 2002, Leukemia, 16, 8, 1460-1469.
4. Babusikova, O., Tomova, A., "Hairy cell leukemia: early immunophenotypical detection and quantitative analysis by flow cytometry", 2003, Neoplasma 50, 350-356.
5. Miller, ML., Fishleder, AJ., Tubbs, RR., "The expression of CD22 (Leu 14) and CD11c (LeuM5) in chronic lymphoproliferative disorders using two-color flow cytometric analysis", 1991, Am J Clin Pathol., 96, 100-108.
6. Tedder, T.F., Tuscano, J., Sato, S., Kehrl, J.H., "CD22, A B lymphocyte-specific adhesion molecule that regulates antigen receptor signaling", 1997, Rev. Immunol., 15, 481-504.
7. Unkeless, J.C., Jin, J., "Inhibitory receptors, ITIM sequences and phosphatases", 1997, Curr. Opin. Immunol., 9, 338-343.
8. Buhl, A.M., Cambier, J.C., "Co-receptor and accessory regulation of B-cell antigen receptor signal transduction", 1997, Immunol. Rev., 160, 127-138.
9. Law, C.L., Sidorenko, S.P., Clark, E.A., "Regulation of lymphocyte activation by the cell-surface molecule CD22", 1994, Immunol. Today, 9, 15, 442-449.
10. Doody, G.M., Dempsey, P.W., Fearon, D.T., "Activation of B lymphocytes : integrating signals from CD19, CD22 and FcγRIIb1", 1996, Curr. Opin. Immunol., 8, 378-382.
11. Lynn Wilson, G., "Genomic structure and chromosomal mapping of the human CD22 gene", 1993, J. Immunol., 11, 150, 5013.
12. Stamenkovic, I., Sgroi, D., Aruffo, A., Sy, M.S., Anderson, T., "The B lymphocyte adhesion molecule CD22 interacts with leukocyte common antigen CD45RO on T cells and alpha2-6 sialyltransferase, CD75, on B cells", 1991, Cell, 66, 1133-1144.
13. Reinherz, E.L., et al., "CD22 workshop Panel report", 1984, Leucocyte Typing II, White Cell Differentiation Antigens., (WS code: B40, section: B cells), Eds., Springer-Verlag, volume 2, 154-167.