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Search-Cyte® Pool Reagent Red Blood Cell 0.8±0.1%

U.S. License No. 1740

For use in the detection of unexpected antibodies in gel techniques

For *in vitro* diagnostic use

INTENDED USE

Search-Cyte® Pool 0.8% Reagent Red Blood Cells is for the detection of unexpected antibodies in gel techniques.

For use with the DG Gel 8 System.

SUMMARY AND EXPLANATION

Search-Cyte® Pool 0.8%, a pool cell of two selected human red blood cells of the blood group O, is suitable for the detection of unexpected antibodies directed against the major blood group systems in donors.

The antigen typings of the pooled cells are provided on the antigenic constitution matrix that accompanies each product.

PRINCIPLE OF THE TEST

Antibodies react with red blood cells possessing the corresponding antigenic determinants. Search-Cyte® Pool 0.8% Reagent Red Blood Cells products are utilized in the gel technique for the detection of unexpected blood group antibodies.

REAGENTS

Search-Cyte® Pool 0.8% consists of a suspension (0.8 ± 0.1%) of two pooled red cells in buffered isotonic solution with added preservatives (0.010% (w/v) neomycin and 0.017% (w/v) chloramphenicol). The pool cell is prepared from two single donors: one of Rh phenotype R_1R_1 (CDe/CDe) and one R_2R_2 (cDE/cDE). The further antigens can be seen on the enclosed antigen matrix. Frozen/thawed red blood cells may have been used in this product. No U.S. standard of potency.

STORAGE AND STABILITY

- The expiration date of each lot is no longer than 61 days from the collection date of red blood cells from any donor in the lot.
- Store at 2 - 8 °C.
- Once a vial has been used, it must be stored at the indicated storage temperature.
- To avoid contamination, close the caps on the vials when they are not in use. Ensure that the caps on the Reagent Red Blood Cell vials have not been swapped.
- If handled and stored appropriately, this product is stable from the time it is first opened until the indicated expiration date.
- **Do not freeze.**

Indication of deterioration: Notable hemolysis (which may be caused by microbial contamination or improper handling), darkening of Reagent Red Blood Cells or spontaneous clumping. The reactivity of the product may decrease slightly during the shelf-life.

PRECAUTIONS

- For *in vitro* diagnostic use.
- Use of plasma may result in failure to detect complement dependent antibodies due to its low complement activity.
- Do not use beyond expiration date. Reactivity of the product may decrease slightly during the shelf-life.
- All blood products should be treated as potentially infectious. Source material from which this product was derived was found negative when tested in accordance with current FDA required tests. No known test methods can offer assurance that products derived from human blood will not transmit infectious agents.

SPECIMEN COLLECTION AND PREPARATION

No special preparation of the patient is required prior to specimen collection. Serum from freshly clotted blood is preferred. For optimum test results, serum should be stored at 2 - 8 °C no longer than 72 hours prior to testing; however, serum may be frozen and stored up to 5 years at -20 °C or colder and tested at a later time if necessary. Plasma samples may be used; however, use of plasma may result in failure to detect complement dependent antibodies due to its low complement activity[1,2].

MATERIALS

Materials Provided

Search-Cyte® Pool 0.8% Reagent Red Blood Cells, 1x10 ml, cat. no. 213663

Materials Required but Not Provided

Please refer to the Instruction for Use of DG Gel 8 cards.

Associated instruments:

For Manual Method

- DG SPIN centrifuge
- DG Therm
- DG Reader Net or DG Reader (optional)

For Fully Automated Methods

- Erytra Eflexis, Erytra or WADiana Compact

PROCEDURE

Both the reagent and the samples to be tested must be brought to room temperature (20 - 25 °C) prior to testing.

Carefully resuspend Search-Cyte® Pool 0.8% by gentle inversion immediately prior to use. Reagent Red Blood Cells are ready-to-use.

Follow the procedure outlined in the DG Gel 8 System's instructions for use.

QUALITY CONTROL

A known negative and a known positive control with weak reacting antibodies should be run in parallel on each day of use.

Use of an autocontrol may be helpful in distinguishing autoantibodies and alloantibodies. If the autocontrol is positive, the serum may contain autoantibody and further testing may be indicated[2].

RESULTS

Interpretation

Agglutination and/or hemolysis (positive reaction) of the Search-Cyte® Pool 0.8% cell indicates the presence of unexpected antibodies. Such antibodies are usually directed against the known antigens present on the screening cells, but may be directed against an antigen not indicated on the antigen matrix.

The lack of both agglutination and hemolysis (negative reaction) in the test procedure indicates the absence of antibodies to antigens contained on the reagent red blood cell.

No agglutination or hemolysis	No atypical antibodies against any of the antigens mentioned on the corresponding antigen matrix are evident.
Agglutination or hemolysis; autocontrol negative:	Specific antibodies against one or more antigens present. An identification with a cell panel (e.g. Data-Cyte® Plus 0.8%) should follow.
Agglutination, including the autocontrol:	a) Reactions at 37 °C and/or by indirect antiglobulin test: warm autoantibodies are likely to be present. b) Reactions at room temperature: presence of cold autoantibodies probable.
Agglutination only in the autocontrol:	The presence of autoantibodies is possible. Perform a direct antiglobulin test.

1. Use the lot-specific antigen matrix for the interpretation of the results.
2. a) Search-Cyte® Pool 0.8% cell positive: Presence of an unexpected antibody.
   b) Search-Cyte® Pool 0.8% cell negative, but compatibility test positive: Presence of an unexpected anti-A_1 (in A_2 or A_2B recipient) possible or an antibody directed against a rare antigen present on the donor cells.
   c) Search-Cyte® Pool 0.8% cell positive, but identification panel negative: Presence of a possible antibody directed against a rare antigen the Search-Cyte® Pool 0.8% cell is not typed for.

LIMITATIONS OF PROCEDURE

1. Pooled cells are not recommended for pretransfusion tests, done in lieu of major cross-match, to detect unexpected antibodies in patient samples.
2. False positive or false negative results can occur due to contamination of test material, improper reaction temperature, improper storage of materials, improper centrifugation, omission of test reagents, or certain disease states.
3. Any modifications of the test procedures described in this instruction for use require validation by the user.
4. It is in the nature of a pool cell that the antigen dose of antigens may be reduced. The reduced antigen density leads to reduced sensitivity for the respective antigen. Therefore, the sensitivity of the pool cell may be slightly lower compared to the sensitivity of a screening cell of a two cell or three cell screening panel.
5. Due to the pool of two cells of two distinct donors, it is possible that the pool cell is positive and negative for a specific antigen, which leads in the case ofa positive result in antibody screening to a double population (one part of cells agglutinating in the gel matrix, whereas the other part of the cells sediments to the bottom of the gel tube). Such a result is to be interpreted as positive.
6. If poor anti-coagulated plasma or incompletely clotted serum is used, fibrin residues may trap non-agglutinated red blood cells at the top of the gel, appearing as a pinkish or reddish layer, but the negative reaction can be interpreted as such. It is recommended to reclot the serum and repeat the test.
7. Low-incidence antigens may not be represented in the Search-Cyte® Pool 0.8% Reagent Red Blood Cells, so negative reactions with them do not always indicate absence of an antibody in the sample under study.
8. Because of the high incidence of the *Fy4* gene in the Black population, it cannot be assumed that the phenoptypes Fy(a+b-) and Fy(a-b+) in Black donors represent homozygous expressions of the Fy^a or Fy^b genes[3].

9. Use of an autocontrol may be helpful in distinguishing between autoantibodies and alloantibodies[2].

False negative results may occur if

1. Antibody elutes from red blood cells during incubation.
2. Red blood cells and/or serum are stored improperly and lose reactivity.
3. Incubation times and/or temperatures are incorrect for proper red blood cells sensitization.
4. Plasma is used, complement-dependent hemolytic reactions may not be detected.

False positive results may occur if

1. Antibodies to antibiotics or to other ingredients in the red blood cells suspending medium used are present in the test serum.
2. In rare cases, the test serum contains an antibody directed at one of the components of the reagent diluent.
3. The formation of "rouleaux", caused by an excess of protein in the serum, the presence of abnormal proteins, drugs, plasma expanders, etc., may cause false positive reactions[2].

SPECIFIC PERFORMANCE CHARACTERISTICS

- Each lot of Search-Cyte® Pool 0.8% Reagent Red Blood Cell is carefully prepared to permit detection of antibodies to the selected red blood cells antigens when used as outlined in these procedures.
- All antigen typings listed on the antigenic constitution matrix are confirmed using two sources of antiserum except for those indicated on the antigenic constitution matrix enclosed with each lot.
- Identified low incidence antigens present are indicated on the antigenic constitution matrix. Direct antiglobulin tests are negative on all red blood cells.
- As with all red blood cells, the reactivity of the product may decrease during the shelf-life. The rate at which antigen reactivity is lost is partially dependent upon individual donor characteristics that are neither controlled nor predictable by the manufacturer. However, if properly stored when not in use, the reagent can be expected to perform as described throughout its shelf-life.
- For manual method, the performance of the reagents was confirmed against FDA-licensed reagents in a comparison study where reagents were tested in parallel at different clinical sites. The estimated percent agreements and their lower limits of 95% one-side confidence interval for all sites combined are indicated on the table below.

Overall Statistical Analysis Results of the comparison study				
	Negative Agreement		Positive Agreement	
	Nº of samples	Percent Agreement (Lower 95% CI)	Nº of samples	Percent Agreement (Lower 95% CI)
Ab. Screening	998	99.50% (98.95%)	221	99.55% (97.87%)

- Percent of Agreement only indicates agreement between reagents and does not indicate which reagent gave the correct result(s).
- For further information about the performance data for manual method using DG Reader or DG Reader Net and for automated method, please refer to the Instruction for Use of the related instrument.

BIBLIOGRAPHY

1. Mollison P.L., Blood Transfusion in Clinical Medicine. 12th ed. Blackwell Scientific Publications, 2014, Chapter 4.
2. Technical Manual of the American Association of Blood Banks. 19th ed. 2017, Chapter 10 and 17.
3. Ibidem: Chapter 12, p. 330.

Manufactured by:
Medion Grifols Diagnostics AG
Bonnstrasse 9, CH-3186 Düdingen / Switzerland

Technical Service:
Emeryville, CA, USA 94608
Telephone (in U.S.): (800) 452-6877
Or: (510) 923-3757
Fax: (800) 462-3938
Email: service.americas@grifols.com

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SYMBOLS KEY

One or more of these symbols may have been used in the labeling/packaging of this product.