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Search-Cyte® Plus
Search-Cyte® TCS
Reagent Red Blood Cells 0.8±0.1%

U.S. License No. 1740

For use in the detection and titration of unexpected antibodies in gel techniques

For *in vitro* diagnostic use

INTENDED USE

Search-Cyte® Plus and Search-Cyte® TCS 0.8% Reagent Red Blood Cells are for the detection and titration of unexpected antibodies in gel techniques.

For use with the DG Gel 8 System.

SUMMARY AND EXPLANATION

Search-Cyte® Plus and Search-Cyte® TCS are suspensions of group O Reagent Red Blood Cells differing in antigenic configuration for use in antibody screening, and are selected to enable detection and titration of most clinically significant blood group antibodies.

The antigen typings of each donor 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® 0.8% Reagent Red Blood Cells products are utilized in the gel technique for the detection of unexpected blood group antibodies.

REAGENTS

Search-Cyte® Plus Reagent Red Blood Cells I and II are individual suspensions of group O red blood cells from two donors: one R_1R_1 (CDe/CDe) and one R_2R_2 (cDE/cDE).

Search-Cyte® TCS Reagent Red Blood Cells I, II and III are individual suspensions of group O red blood cells from three donors: one R_1R_1 (CDe/CDe), one R_2R_2 (cDE/cDE) and one rr (cde/cde).

All red blood cells are 0.8 ± 0.1% suspensions in isotonic medium with added buffers (bicarbonate and phosphate) and preservatives (0.010% neomycin (w/v) and 0.017% chloramphenicol (w/v)). The suspending medium contains no ingredients to inhibit complement mediated hemolysis. 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. The samples should be tested as soon as possible. Frozen samples stored up to 5 years at -20 °C or colder may be used after thawing. If the recipient has been pregnant or transfused within the previous three months samples stored at 2 - 8 °C should be used within 72 hours after collection. 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® Plus 0.8% Reagent Red Blood Cells I and II, 2x10 ml, cat. no. 213656

Search-Cyte® TCS 0.8% Reagent Red Blood Cells I, II and III, 3x10 ml, cat. no. 213655

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® 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) with any of the Search-Cyte® cells indicate the presence of unexpected antibodies. Such antibodies are usually directed against the known antigens present on the screening red blood cells, but may be directed against an antigen not indicated on the antigenic constitution matrix. The lack of both agglutination and hemolysis (negative reaction) in the test procedure indicates the absence of antibodies to antigens contained in the reagent. Agglutination or hemolysis in the autocontrol well indicates further studies are necessary[1]. To interpret the titration tests results follow the IFU for DG Gel 8 cards.

LIMITATIONS OF THE PROCEDURE

1. 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.
2. Any modifications of the test procedures described in this instruction for use require validation by the user.
3. 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[2].
4. Low-incidence antigens may not be represented in the Search-Cyte® 0.8% Reagent Red Blood Cells, so negative reactions with them do not always indicate absence of an antibody in the sample under study.
5. 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].
6. 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® 0.8% Reagent Red Blood Cells 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.
- For the antibody titration test, the performance of the reagent in the automatic technique was confirmed against the manual method in a comparison study. For further information about the performance of the 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.

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SYMBOLS KEY

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