








BLOOD GROUPING REAGENT
Anti-D blend
ALBAclone®
(Human/Murine Monoclonal IgM/IgG)
For Slide and Tube Techniques

This insert refers to product Z041U

- **Meets FDA potency requirements**
- **Discard if turbid**
- **Preservative: 0.1% sodium azide**

CAUTIONS: THE ABSENCE OF ALL VIRUSES HAS NOT BEEN DETERMINED. THIS PRODUCT HAS COMPONENTS (DROPPER BULBS) CONTAINING DRY NATURAL RUBBER.

INTERPRETATION OF LABELING SYMBOLS

	Batch code
	Use by (YYYY-MM-DD)
	Storage temperature limitation (2°C-8°C)
	<i>In vitro</i> diagnostic medical device
	Consult instructions for use
	Harmful
	Manufacturer

SUMMARY

First described in 1939, the RhD antigen is surpassed in importance only by the antigens of the ABO blood group system. Transfusion of RhD positive blood to a RhD negative recipient or failure to administer prophylactic anti-D to a RhD negative woman can result in the production of anti-D. Consequently, establishing the correct RhD group is fundamental to safe transfusion practice. Certain individuals exhibit a quantitative reduction in the expression of their RhD antigen and are categorised as weak D (D^w). Others display a qualitative variation in RhD antigen expression and are

referred to as partial RhD. Weak D individuals may also be partial RhD.

This monoclonal anti-D will directly agglutinate red blood cells from most weak D and partial RhD except DVI and, therefore, is suitable for RhD grouping of patient samples. **This reagent will also detect DVI and weak D by IAT and, therefore, is also suitable for RhD grouping of donor samples.**

INTENDED USE

This Anti-D reagent is for the *in vitro* detection and identification of human RhD blood group status in patient samples by direct agglutination, and donor samples by the indirect antiglobulin test.

PRINCIPLE OF THE TEST

When used by the recommended technique, this reagent will cause agglutination (clumping) of red blood cells carrying the RhD antigen. Lack of agglutination demonstrates the absence of the RhD antigen.

REAGENT DESCRIPTION

The main component of this reagent is derived from the *in vitro* culture of the human/mouse heterohybridomas LDM3 which secretes IgM anti-D and ESD1 which secretes IgG anti-D. The formulation also contains potentiators, EDTA and 1g/l sodium azide.

The volume delivered by the reagent dropper bottle is approximately 40µl. Bearing this in mind, care should be taken to ensure that appropriate serum:cell ratios are maintained in all test systems.

STORAGE CONDITIONS

The reagent should be stored at 2°C - 8°C. Do not use if turbid. Do not dilute. The reagent is stable until the expiry date stated on the product label.

PRECAUTIONS FOR USE AND DISPOSAL

This reagent contains 0.1% (w/v) sodium azide. Sodium azide may be toxic if ingested and may react with lead and copper plumbing to form explosive compounds. If discarded into sink, flush with a large volume of water to prevent azide buildup.

CAUTION: SOURCE MATERIAL FROM WHICH THIS PRODUCT IS DERIVED WAS FOUND NON-REACTIVE FOR HBsAg, ANTI-HIV 1/2 AND ANTI-HCV. NO KNOWN TEST METHODS CAN OFFER ASSURANCE THAT PRODUCTS DERIVED FROM HUMAN BLOOD WILL NOT TRANSMIT INFECTIOUS DISEASE. APPROPRIATE CARE SHOULD BE TAKEN IN THE USE AND DISPOSAL OF THIS PRODUCT.

This product has components (dropper bulbs) containing dry natural rubber. This reagent is for *in vitro* diagnostic use only.

SPECIMEN COLLECTION AND PREPARATION

Specimens should be collected by aseptic technique with or without an anticoagulant. The specimen should be tested as soon as possible after collection. If testing is delayed, the specimen should be stored at 2°C - 8°C. Blood specimens exhibiting gross haemolysis or contamination should not be

used. Clotted samples or those collected in EDTA should be tested within fourteen days from collection. Donor blood stored in citrate anticoagulant may be tested until the expiry date of the donation.

TEST PROCEDURES

General Information

This reagent has been standardised for use by the techniques described below and therefore its suitability for use in other techniques cannot be guaranteed. When a test is required to be incubated for a specific time period, a timer should be used. For routine typing of patient samples, the tube technique with immediate spin, or up to 15 minute incubation, should be used. If the detection of weak D, or RhDVI red blood cells is required, the 15 minute incubation tube test followed by IAT should be used.

ADDITIONAL MATERIALS AND REAGENTS REQUIRED

- Isotonic saline
- Reagent red blood cells for use in RhD grouping
- Polyspecific Anti-Human Globulin / Monospecific Anti-Human IgG
- IgG sensitized red blood cells
- 10 x 75mm or 12 x 75mm glass test tubes
- Glass slides
- Pipettes
- Optical aid
- Centrifuge
- Heating block / waterbath @ 37°C
- Timer

RECOMMENDED TECHNIQUES

Tube Technique - Immediate Spin

- Add 1 volume of blood grouping reagent to a test tube.
- Add 1 volume of red blood cells suspended to 2-4% in isotonic saline.
- Mix the contents of the test tube well and centrifuge. Suggested centrifugation: 1000g for 10 seconds or a time and speed appropriate for the centrifuge used that produces the strongest reaction of antibody with antigen-positive red blood cells, yet allows easy resuspension of antigen-negative red blood cells.
- After centrifugation, gently shake the tube to dislodge the cell button from the bottom and immediately observe macroscopically for agglutination.
- NOTE: If required, tests can be incubated as detailed below before performance of IAT.

Tube Technique – 15 minute / spin

- Add 1 volume of blood grouping reagent to a test tube.
- Add 1 volume of red blood cells suspended to 2-4% in isotonic saline.
- Mix the contents of the test tube well and incubate for 15 minutes at 37°C ± 1°C.
- Centrifuge the test tube. Suggested centrifugation: 1000g for 10 seconds or a time and speed appropriate for the centrifuge used that produces the strongest reaction of antibody with antigen-

positive red blood cells, yet allows easy resuspension of antigen-negative red blood cells.

- After centrifugation, gently shake the tube to dislodge the cell button from the bottom and immediately observe macroscopically for agglutination.

Indirect Antihuman Globulin Test

After reading the 15 minute incubation tube test, complete the indirect antiglobulin test, without further incubation, by the procedure described below, or according to the instructions of the manufacturer of the anti-human globulin reagent.

- Wash the test 4 times with a large excess of isotonic saline.
(eg 4ml of saline per 12 (or 10) x 75mm glass tube)
- NOTE: (i) allow adequate spin time to sediment the red cells.
(ii) make sure that most of the residual saline is removed at the end of each wash.
- Add two drops of anti-human globulin reagent to each tube.
- Mix the contents of the test tube well and centrifuge.
Suggested centrifugation: 1000g for 10 seconds or a time and speed appropriate for the centrifuge used that produces the strongest reaction of antibody with antigen-positive red blood cells, yet allows easy resuspension of antigen-negative red blood cells.
- After centrifugation, gently shake the tube to dislodge the cell button from the bottom and immediately observe macroscopically for agglutination.

The use of weak IgG sensitized red blood cells (eg R₁r cells sensitized with anti-Rh(D)) is essential to confirm the activity of an AHG reagent in negative tests.

- Add 1 volume of IgG sensitized reagent red cells to each negative anti-human globulin test.
- Mix the contents of the test tube well and centrifuge.
Suggested centrifugation: 1000g for 10 seconds or a time and speed appropriate for the centrifuge used that produces the strongest reaction of antibody with antigen-positive red blood cells, yet allows easy resuspension of antigen-negative red blood cells.
- After centrifugation, gently shake the tube to dislodge the cell button from the bottom and immediately observe macroscopically for agglutination.
- Any test which does not show a positive reaction should be considered invalid and repeated.

Slide Technique

- Add 1 volume of blood grouping reagent to an appropriately prepared area of a glass slide e.g. a wax pencil oval.
- Add 1 volume of red blood cells suspended to 30-45% in group homologous plasma/serum.
- Mix well by rocking the slide for approximately 30 seconds and incubate the test for 5 minutes at 18 – 24°C with occasional mixing.
- After incubation, immediately observe macroscopically for agglutination. This may be facilitated by reading over a diffuse light source.

INTERPRETATION OF RESULTS

Agglutination = positive test result
No agglutination = negative test result

QUALITY CONTROL

Quality control of reagents is essential and should be performed with each series of RhD groups, single RhD groups and in accordance with local, state and federal regulations. We suggest that the following red blood cell samples are used to control the reactions of this reagent. Other red blood cell types may be suitable but should be selected with care.

O R₁r red blood cells should be used as a positive control
O rr red blood cells should be used as a negative control

PERFORMANCE LIMITATIONS

Slide techniques are not recommended for the detection of weak D or partial RhD samples. All negative slide tests should be confirmed by tube testing to confirm absence of weak subgroups.

Certain tests performed on unwashed samples (eg cord), direct antiglobulin test positive samples, or samples stored and tested at 18°C or below, may exhibit false positive reactions due to the potentiators used in the formulation of this reagent. A satisfactory reagent control may be achieved by substituting 6-10% BSA in saline for the blood grouping reagent in the procedure chosen for use. If the control test gives a positive reaction, a valid interpretation of the results obtained in red blood cell testing cannot be made. A control test should always be used if a sample groups as AB RhD positive.

Driblocks and waterbaths promote better heat transfer and are recommended for 37°C tests, particularly where the incubation period is 30 minutes or less.

Some very weak D and/or partial RhD samples may not react with monoclonal anti-D reagents.

The expression of certain red blood cell antigens may diminish in strength during storage, particularly in EDTA and clotted samples. Better results will be obtained with fresh samples.

Gently resuspend tube tests before reading. Excessive agitation may disrupt weak agglutination and produce false negative results.

Excessive centrifugation can lead to difficulty in resuspending the cell button, while inadequate centrifugation may result in agglutinates that are easily dispersed.

False positive or false negative results can occur due to contamination of test materials, improper reaction temperature, improper storage of materials, omission of test reagents and certain disease states.

SPECIFIC PERFORMANCE CHARACTERISTICS

Prior to release, each lot of ALBAclone® Anti-D *blend* is tested by FDA recommended methods against a panel of antigen-

positive and antigen-negative red blood cells to ensure suitable reactivity.

This Anti-D reagent will directly agglutinate red blood cells from most weak D and known RhD categories except DVI.

This reagent will also detect DVI and weak D by IAT.

BIBLIOGRAPHY

1. Technical Manual. 15th ed. Bethesda, MD: American Association of Blood Banks, 2005.
2. Standards for Blood Banks and Transfusion Services. 24th ed. Bethesda, MD: American Association of Blood Banks, 2006.

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