SPECTRUM

The Creative Approach To Bioscience

Low Ionic Strength Solution (LISS)

REF: 284 001 4 x 10 ml
REF: 284 002 4 x 100 ml
REF: 284 003 2 x 500 ml

SYMBOLS IN PRODUCT LABELLING

EC REP	Authorised Representative		Temperature Limitation
IVD	For in-vitro diagnostic use		Use by/Expiration Date
LOT	Batch Code/Lot number		CAUTION. Consult instructions for use
REF	Catalogue Number		
	Consult instructions for use		Manufactured by

Intended Use

LISS is used as potentiator for red blood cells, reducing the ionic strength of the antibody: antigen reaction mixture by suspending red cells in LISS permits a substantial reduction in incubation time and an increase in test sensitivity. These advantages of LISS are entirely dependent on correct preparation and use. Therefore, laboratories that use LISS techniques must take particular care with staff training.

Background

In 1964 Mollison and Polley discovered that by reducing ion strength with a Low Ionic Strength Solution (LISS) antigen-antibody-reaction is considerably accelerated on blood group serological tests.

LISS solution used as suspension medium for red cells and contributing to reaction time reduction while at the same time increasing reaction strength. In antibody determination with coombsreactive antisera, LISS can be used in addition to the incubation medium.

Low Ionic Strength Salt Solutions (LISS) increase the rate of antigen-antibody complex formation. Additionally, since antibody uptake is increased, incubation times of antigen-antibody reactions can be shortened. Excessive amounts of ions can interfere with binding of antibody to antigen. Enhancement is achieved by decreasing the amount of ions in solution.

Assay Principle

Red blood cells are suspended in LISS Solution for cross match, DAT, weak D typing and in LISS for antibody screening, identification to be tested in the solid phase antiglobulin test Solidscreen II (please also refer to instructions for use of Solidscreen II).Solidscreen II is a solid phase assay for

a) the detection of red blood cell alloantibodies or autoantibodies in human plasma or serum.
b) the determination of weak D and partial D antigens (DVI and DVII) of donor samples which have tested negative with IgM anti-D using Erytype S and the.

The Solidscreen II well is coated with Protein A. Protein A is a component of the cell wall of Staphylococcus aureus and has a very high affinity for the Fc portion of most immunoglobulin classes. For a) The plasma or serum and red blood cells (RBC, donor or patient red blood cells) are added to the Protein-A coated well. Sensitization of the red cell occurs if the corresponding antibody is present for the antigen on the red cell.

For b) Solidscreen II Anti-D Blend and donor red blood cells are added to the Protein- A coated well. Sensitization of the red blood cell occurs if D antigen is present on the red blood cell.

Following incubation, and two wash processes to remove unbound protein, Anti- Human Globulin Anti-IgG Solidscreen II is added to the well. Following centrifugation, the well is evaluated. A smooth monolayer of cells is indicative of a positive reaction. A compact button of cells in the middle of the well is indicative of a negative reaction.

Precautions and Warnings

1. In vitro diagnostic reagent for laboratory and professional use only. Not for medicinal use.
2. The reagent contains 0.09% sodium azide as a preservative. Avoid contamination with skin and mucosa. On disposal flush with large quantity of water.
3. Do not freeze or expose the reagent to elevated temperatures. After usage immediately replace the bottle back to 2-8°C.
4. Turbidity may indicate reagent deterioration or contamination, such reagent should be discarded.
5. Samples that cannot be tested immediately should be stored between +20 ^{O}C and +8 ^{O}C and tested within 48 hours.
6. All materials should be at room temperature before testing.
7. Do not use hemolysed or contaminated blood samples.

Preparation, Storage & Stability

Spectrum LISS is supplied ready-to-use and stable up to the expiry date labeled on the bottles when properly stored specified temperature.

Specimen Collection & Preparation

For antibody screening, identification (Indirect Antiglobulin Test IAT)

Fresh samples of clotted or EDTA anticoagulated whole blood can be used for antibody screening, identification with the indirect antiglobulin test. Samples collected following standard blood sampling guidelines are acceptable. The specimen should be tested as soon as possible after collection. If testing is delayed, EDTA and clotted specimens should be stored at 2 to 8°C. Use of samples older seven days should be avoided unless there is no other alternative since antibody reactivity has been shown to decrease in older samples. Stored samples should be allowed to reach room temperature prior to testing. Blood specimens exhibiting gross hemolysis or contamination should not be used. There must be a distinct separation between the cellular and the plasma layer in the sample tube. Samples can be centrifuged or allowed to settle.

Procedure

LISS techniques offer increased test sensitivity with decreased incubation time. However, the benefits of LISS are entirely dependent on the correct performance of techniques. For optimum sensitivity the LISS indirect antiglobulin technique requires a minimum incubation time of 15 minutes.

Red cells should be washed at least twice in normal saline before they are finally washed and resuspended to 1.5-2% in LISS. This avoids the non-specific uptake of autologous complement by the red cells which can lead to unwanted positive reactions in anti-human globulin tests.

Direct agglutination tests at or below room temperature detect cold antibodies, which are nearly always of no clinical significance, and consequently such techniques are not recommended for routine antibody screening or compatibility testing. Unwanted positive reactions are less likely to be encountered if the temperature of the red cell suspension, LISS or serum is in the range +19 ºC to +25ºC immediately before use.

Red cells suspended in LISS should be clearly distinguished from red cells at normal ionic strength and should be discarded within 24 hours of preparation

References

1. Issitt, Peter D., and Issitt, Charla H. Applied Blood Group Serology Oxnard, Calif.: Spectra Biologicals, 1979
2. Walsh, RJ. “The effect of electrolytes on the Rh agglutination reaction.” Med J Aust 1948;i:793.
3. KJ Reis et al. Journal of Immunology 1984
4. Mark E. Brecher, MD et al. Technical Manual 15th Edition, Bethesda.

ORDERING INFORMATION	
CATALOG NO.	**QUANTITY**
284 001	4 x 10 ml
284 002	4 x 100 ml
284 003	2 x 500 ml

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