

Product datasheet

PolymorphPrep

Short overview

Cat. No.	1895
Quantity	1x250 ml

Product description

Product description	Polymorphprep is a ready-made, sterile and endotoxin tested solution for the isolation of polymorphonuclear leukocytes (PMNs) from whole undiluted human blood. The solution contains Sodium Diatrizoate and a Polysaccharide
Density	1.113 +/- 0.001 g/ml
Composition	Sodium Diatrizoate 13.8% (w/v), Polysaccharide 8.0% (w/v)
Osmolality	440-500 mOsmol/kg
Endotoxin	< 1.0 EU/ml
Stability and storage	Polymorphprep is stable for 3 years provided the solution is kept sterile and protected from direct sunlight. Prolonged exposure to direct sunlight leads to release of iodine from the sodium diatrizoate molecule. This effect is negligible when working with this solution on a day to day basis. Polymorphprep should be stored at room temperature (+4°C to +30°C).
Intended use	Research use only

Background

With the exception of the basophils, polymorphonuclear leukocytes (PMNs) have a much greater buoyant density than the mononuclear cells, >1.085 g/ml. Unfortunately, the buoyant density of the erythrocytes tends to be from 1.09 - 1.11 g/ml, this makes a separation from whole blood using a density barrier similar to that used for mononuclear cells more difficult. A number of procedures have been developed in an effort to overcome these difficulties.

The high osmolality of Polymorphprep™ causes erythrocytes to lose water and shrink, thus increasing their effective buoyant densities. This allows the dextran aggregated erythrocytes to sediment rapidly through the dense medium.

Because the osmotic gradient between the medium and the erythrocytes declines as the cells sediment further into the medium (ie the water loss from the erythrocytes is greatest at the top of the Polymorphprep™ and progressively decreases as they sediment further) - a gradient of diatrizoate forms within the density barrier. The PMNs band within this density gradient while the mononuclear cells remain at the sample/medium interface.

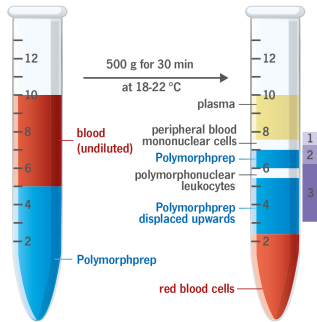
Each batch of Polymorphprep is checked on the level of endotoxins using a specific LAL test. Our goal is to produce batches with an endotoxin level lower or equal to 0.13 IU/ml.

The method is effective only with whole undiluted blood not with a leukocyte-rich fraction. The temperature is important to obtain optimal results, as changes in temperature effect the density and viscosity of the Polymorphprep™ solution. The temperature of the blood sample and the medium should be kept between 18-22 degree Celsius.

Analysis of the top and bottom bands from the Polymorphprep™ separation can be performed by a Coulter STKR Cell Analyser. The analyzer determines the number of cells in the sample (ordinate) as a function of cell volume (abscissa). Relative cell number is the number of cells of a particular volume expressed as a fraction of the total in each sample.

The cell band on top of the Polymorphprep contains only peripheral blood mononuclear cells (PBMCs). The cell band itself can be separated into lymphocytes (upper layer, 1) and monocytes (lower layer, 2). All of the PMNs are in the bottom cell band, which is enclosed of the Polymorphprep solution. Contamination of the PMN band by erythrocytes is between 2-6 % of the total cell number

Product images



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References

Publication	Species	Application
Jia, L. J. et al. Aspergillus fumigatus hijacks human p11 to redirect fungal-containing phagosomes to non-degradative pathway. Cell Host Microbe 31, 373â€“388 (2023).		

References

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