MB547 HiPurA® Water DNA Purification Kit

(For isolation of DNA from bacterial and fungal species in water)

Kit Contents

Product Code	Reagents provided	MB547		
		20 Preps	50 Preps	250 Preps
DS0014	Gram Positive Lysis Solution (GPLA)	6 ml	15 ml	75 ml
DS0015	Lysis Solution (AL)	6 ml	15 ml	75 ml
DS0010	Lysis Solution (C1)	6 ml	15 ml	75 ml
DS0031	Prewash Solution (PWB)	12 ml	30 ml	150 ml
DS0012	Wash Solution Concentrate (WS)	4 ml	10 ml	50 ml
DS0040	Elution Buffer (ET) [10 mM Tris-Cl, pH 8.5]	4 ml	10 ml	50 ml
DS2280	Proteinase K	10 mg	25 mg	125 mg
DS0003	RNase A Solution (20 mg/ml)	0. 5 ml	1.25 ml	6.25 ml
DS2281	Lysozyme	300 mg	750 mg	3.75 g
DBCA03	HiElute Miniprep Spin Column (Capped) [in DBCA16 Collection Tube]	20 nos	50 nos	250 nos
DBCA016	Collection Tube (Uncapped), Polypropylene (2.0 ml)	20 nos	50 nos	250 nos
DBCA017	Collection Tube, Polypropylene (2.0 ml)	40 nos	100 nos	2X 250 nos

Intended Use

Recommended for isolation of DNA from water samples

Introduction

HiPurA® Water DNA Purification Kit provides a fast and easy method for purification of total DNA for reliable applications in PCR, Southern blotting technique etc. The DNA purification procedure using the miniprep spin columns comprises of three steps viz, adsorption of DNA to the membrane, removal of residual contaminants and elution of pure genomic DNA. HiMedia's HiElute Miniprep Spin Column (Capped) format allows rapid processing of multiple samples. The columns have a high binding capacity and high-quality DNA is obtained from various species. The DNA obtained is compatible with downstream applications such as restriction enzyme digestion, PCR amplification and Southern blotting.

HiPurA® Water DNA Purification Kit

HiPurA® Water DNA Purification Kit provides a convenient and rapid method for detection of microorganisms from environmental water samples. The kit allows rapid isolation and purification of total DNA from bacteria and fungi found in water samples. The water sample is passed through a 0.22µ filter and the microorganisms present in the water are trapped. For enrichment of these microorganisms, either a universal media or specific selective media is required.

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Cells are grown in the medium till they reach log phase and are harvested by centrifugation. After harvesting, the bacterial (Gram positive) cell wall is degraded by lysozyme and Proteinase K.

For Gram negative bacteria, the lysozyme treatment is not required. Following lysis, the DNA is bound to the silica-gel membrane of the HiElute Miniprep Spin Column (Capped) to yield pure DNA. Two rapid wash steps remove trace amount of salt and protein contaminants resulting in the elution of pure DNA in the Elution Buffer provided with the kit.

For yeast cells (*Saccharomyces cerevisiae*, *Candida albicans*), one can also follow the alternative protocol (with Proteinase K treatment instead of lyticase) where spheroplasting is not required. The rigorous treatment with Proteinase K disrupts the cell wall and proteolytic digestion of the cellular protein occurs. Furthermore, Proteinase K completely denatures the histones and histone-like proteins. Hence, depending upon the downstream applications one can isolate genomic DNA from yeast either by using Proteinase K (following alternative protocol) or Lyticase. Thus, DNA extraction with Proteinase K gives excellent results and can be used for all applications, except where spheroplasting is specifically required.

HiElute Miniprep Spin Column (Capped) [DBCA03]

HiElute Miniprep Spin Column (Capped) is based on the advanced silica binding principle presented in a microspin format. The system efficiently couples the reversible nucleic acid-binding properties of the advanced silica gel membrane and the speed plus versatility of spin column technology to yield high quantity of DNA. The use of spin column facilitates the binding, washing, and elution steps thus enabling multiple samples to be processed simultaneously. This column eliminates the need for alcohol precipitation, expensive resins, and harmful organic compounds such as phenol and chloroform, otherwise employed in traditional DNA isolation techniques. DNA binds specifically to the advanced silica-gel membrane while contaminants pass through. PCR inhibitors such as divalent cations and proteins are completely removed in two efficient wash steps, leaving pure nucleic acid to be eluted in the buffer provided with the kit. The purified DNA is upto 50 kb (predominant fragment size 20-30 kb) in length and can be used for further downstream applications.

Elution

The yield of genomic DNA depends on the sample type and the number of cells in the sample. A single elution with 100 µl of Elution Buffer (ET) will provide sufficient DNA to carry out multiple amplification reaction. Elution with volume less than 100 µl will increase the final DNA concentration, but will reduce the overall DNA yield. The eluted DNA ranges in size upto 50 kb (predominant fragment size 20-30 kb), and is suitable for direct use in PCR, restriction digestion, and Southern blotting applications.

Concentration, yield and purity of DNA

Spectrophotometric analysis and agarose gel electrophoresis will reveal the concentration and the purity of the genomic DNA. Use Elution Buffer (ET) to dilute samples and to calibrate the spectrophotometer, measure the absorbance at 260 nm, 280 nm, and 320 nm using a quartz microcuvette. Absorbance readings at 260 nm should fall between 0.1 and 1.0. The 320 nm absorbance is used to correct for background absorbance. An absorbance of 1.0 at 260 nm corresponds to approximately 50 µg/ml of DNA. The $A_{260}–A_{320} / A_{280}–A_{320}$ ratio should be 1.6-1.9. Purity is determined by calculating the ratio of absorbance at 260 nm to absorbance at 280 nm. DNA purified by HiPurA® Water DNA Purification Kit is free of protein and other contaminants that can inhibit PCR or other enzymatic reactions.

Concentration of DNA sample (µg/ml) = 50 x A_{260} x dilution factor.

Materials needed but not provided

- 37°C water bath or heating block
- 55°C water bath or heating block
- 0.22µ filter paper
- Tabletop Microcentrifuge (with rotor for 2.0 ml tubes)
- Ethanol (96 -100%)
- Zymolyase or Lyticase (Product Code: MB099) (For Yeast protocol)
- Lysostaphin (Optional) (For *Staphylococcus* species only)
- Mutanolysin (Optional) (For *Streptococcus* species only)
- Enrichment medium
- Sorbitol Buffer (For Yeast protocol)
- Molecular Biology Grade Water (Product code: ML024)

Storage

Store the HiPurA® Water DNA Purification Kit between 15-25°C except certain components as specified on each label. Under recommended condition kit is stable for 18 months.

General Preparation Instructions

1. Preheat a water bath or heating block to 55°C.
   (For Gram positive, Gram negative bacteria and alternative protocol of yeast).

2. Preheat a water bath or heating block to 37°C.
   (For Gram positive bacteria only).

3. **Thoroughly mix reagents**
   Examine the reagents for precipitation. If any kit reagent forms a precipitate (other than enzymes), warm at 55-65°C until the precipitate dissolves and allow cooling to room temperature (15-25°C) before use.

4. Ensure that clean & dry tubes and tips are used for the procedure.

   NOTE: The Proteinase K solution must be added directly to each sample preparation every time. Do not combine the Proteinase K and Lysis Solution for storage.

5. **Dilute Wash Solution Concentrate (WS) (DS0012) as follows:**

Number of Preps	Wash Solution Concentrate (WS)	Ethanol (96-100%)
20	4 ml	16 ml
50	10 ml	40 ml
250	50 ml	200 ml

6. **Reconstitute Proteinase K (DS2280)**

   The HiPurA® Water DNA Purification Kit contains Proteinase K. Intensive research has shown that it is the optimal enzyme for use with the Lysis Solution provided in the kit. It is completely free of DNase and RNase activity. Proteinase K is the enzyme of choice for use with an SDS containing Lysis Solution. The specific activity of Proteinase K is 33.5 units/mg dry weight.

   Resuspend the Proteinase K (DS2281) powder in Molecular Biology Grade Water (ML024) to obtain a 20 mg/ml stock solution.

Number of Preps	Proteinase K	Molecular Biology Grade Water
20	10 mg	0.5 ml
50	25 mg	1.25 ml
250	125 mg	6.25 ml

The product as supplied is stable at room temperature (15-25°C); upon reconstitution store at -20°C as mentioned in storage instructions.

NOTE: The Proteinase K solution must be added directly to each sample preparation every time. Do not combine the Proteinase K and Lysis Solution for storage.

7. **Prepare Lysozyme Solution (Product Code: DS2281) [For Gram positive bacteria only]**
   Prepare a 45 mg/ml solution of Lysozyme (approximately 2.115 x 10^6 unit/ml) with the Gram-Positive Lysis Solution (GPLA) as the diluent, which is provided in the kit. Lysozyme solution should be freshly prepared prior to use.
   Example: In order to make 1 ml of Lysozyme solution, dissolve 45 mg of lysozyme (provided) in 1 ml of Gram-Positive Lysis Solution (GPLA). Pipette the mixture up and down or vortex to dissolve the lysozyme.

   NOTE: Lysozyme dissolves readily by pipetting up and down as opposed to vortexing. Excessive vortexing may cause foaming.

   For each DNA preparation, 200 µl of lysozyme solution is required. Make extra solution to account for pipetting error. The lysozyme solution should be preferably used on the day of preparation. If some Lysozyme stock solution is left, it can be stored at -20°C.

8. **Sorbitol buffer (For Yeast only)**
   1M sorbitol
   100 mM EDTA
   14 mM ß-mercaptoethanol.

   If the isolated DNA is to be used for PCR, mix with gentle pipetting or inversion until homogenous, instead of vortexing in the following procedure as it reduces shearing of DNA considerably.

RNase A enzyme treatment

RNase A is a type of RNase that is commonly used in research. RNase A (e.g., bovine pancreatic ribonuclease A) is one of the sturdiest enzymes in common laboratory usage. It cleaves 3'end of unpaired C and U residues.

Unit Definition for RNase A
One unit of the enzyme causes an increase in absorbance of 1.0 at 260 nm when yeast RNA is hydrolyzed at 37°C and pH 5.0. Fifty units are approximately equivalent to 1 Kunitz unit. It is completely free of DNases and proteases. The specific activity is 90 U/mg.

The product as supplied is stable at room temperature (15-25°C).

Centrifugation

All centrifugation steps are carried out in conventional laboratory centrifuge e.g. Beckman CS-6KR, Heraeus Varifuge 3.0R, or Sigma 6k10 with fixed angle rotor. The tubes provided with the kit are compatible with almost all laboratory centrifuges and rotors. All centrifugation steps are performed at room temperature and are given in g, the correct rpm can be calculated using the formula:

$$RPM = \sqrt{RCF/1.118 \times 10^{-5}\, r}$$

where *RCF* = required gravitational acceleration (relative centrifugal force in units of g); *r* = radius of the rotor in cm; and *RPM* = the number of revolutions per minute required to achieve the necessary *g*-force.

Specimen Collection and Handling

Collect water samples in sterile flask. Store the water samples at 15-25°C for short term use or at 2-8°C for long term use.

Types of Specimen: Water samples

Procedure

a. Filter 10-15 ml (or desired volume) of water sample through a pre-sterilized 0.22µ filter paper to trap the microorganisms.

   NOTE: If the water sample seems to have excess of debris, centrifuge the desired volume of water at 800 x g (1000- 1500 rpm) for 5 minutes, to remove the debris and collect the supernatant in a sterile container. Filter the supernatant as mentioned above.

b. Aseptically remove the filter paper using sterile forceps, place it into an enrichment media broth (that is specific and selective for the desired microorganism) and incubate it at suitable conditions required for the growth.

c. After enrichment, proceed with any of the following protocols (depending on desired microorganism) for DNA isolation.

A. <u>For Gram Negative Bacterial DNA Isolation</u>

1. **Harvesting of cells**
   Pellet 1.5 ml of the broth culture in capped 2.0 ml collection tube by centrifuging for 2 minutes at 12,000-16,000 x g (approximately 13,000-16,000 rpm). Remove the culture medium and discard.

2. **Resuspend cells**
   Resuspend the pellet thoroughly in 180 µl of Lysis Solution (AL) (DS0015).

3. **Prepare for cell lysis**
   Add 20 µl of the Proteinase K solution (20 mg/ml) **(Refer General Preparation Instructions)** to the sample. Mix and incubate for 30 minutes at 55°C. If residual RNA is not a concern, continue with step 4a.

   Optional RNase A treatment
   If RNA-free genomic DNA is required, add 20 µl of RNase A Solution (DS0003), mix and incubate for 5 minutes at room temperature (15-25°C), then continue with step 4a.

4. **Lyse cells**
   Add 200 µl of Lysis Solution (C1) (DS0010), vortex thoroughly (about 15 seconds) and incubate at 55°C for 10 minutes. Continue with “DNA Isolation” procedure.

   NOTE: A homogeneous mixture is essential for efficient lysis.

B. <u>For Gram Positive Bacterial DNA Isolation</u>

1. Prepare Lysozyme Solution using Lysozyme from chicken egg white, which is provided in the kit. Prepare a 45 mg/ml stock solution of lysozyme as described under General Preparation Instructions. 200 µl of Lysozyme Solution is required per isolation procedure. Prepare extra solution to account for pipetting error.

NOTE: (Optional) For higher yields: If working with *Staphylococcus* species, supplement the Lysozyme Solution with 200 units/ml of lysostaphin. For *Streptococcus* species, supplement the Lysozyme Solution with 250 units/ml of mutanolysin.

2. **Harvest Cells**
   Pellet 1.5 ml of the broth culture in capped 2.0 ml collection tube by centrifuging for 2 minutes at 12,000-16,000 x g (≈13,000-16,000 rpm). Remove the culture medium completely and discard.

3. **Resuspend cells**
   Resuspend the pellet thoroughly in 200 µl of lysozyme solution (prepared in step 1b) and incubate for 30 minutes at 37°C.

4. **Lyse cells**
   Add 20µl of the Proteinase K solution (20 mg/ml) **(Refer General Preparation Instructions)** to the sample. If residual RNA is not a concern continue with step 5b.

   Optional RNase A treatment
   If RNA-free genomic DNA is required, add 20 µl of RNase A Solution (DS0003), mix and incubate for 5 minutes at room temperature (15-25°C), then continue with step 5b.

5. Add 200 µl of Lysis Solution (C1) (DS0010). Vortex thoroughly for few seconds and incubate at 55°C for 10 minutes, then continue with "DNA Isolation" procedure.

   NOTE: A homogeneous mixture is essential for efficient lysis.

C. Protocol for Yeast Using Lyticase (e.g. S*accharomyces cerevisiae*, *Candida albicans*)

1. Grow yeast culture *Saccharomyces cerevisiae* or *Candida spp.* in YPD medium (Product Code: M1363). Harvest cells in capped 2.0 ml collection tube by centrifuging for 10 minutes at 5000 x g (≈7500 rpm). Remove the culture medium completely and discard.

2. **Resuspend cells**
   Resuspend the pellet in 600 µl of Sorbitol Buffer. Add 200U of zymolyase or lyticase and incubate at 30°C for 30 minutes.

3. Pellet the spheroplasts by centrifuging for 5 minutes at 5000 x g (≈7500 rpm).

4. **Lyse cells**
   Resuspend the spheroplasts in 180 µl of Buffer AL (DS0015). Continue with "DNA Isolation" procedure.

D. Alternative Protocol For Yeast Using Proteinase K

1. Grow and harvest the cells as mentioned in step 1c.

2. **Resuspend cells**
   Resuspend the pellet thoroughly in 180 µl of Lysis Solution (AL) (DS0015).

3. **Prepare for cell lysis**
   Add 20 µl of the Proteinase K solution (20 mg/ml) **(Refer General Preparation Instructions)** to the sample. Mix and incubate for 30 minutes at 55°C. If residual RNA is not a concern, continue with step 4d.

4. **Optional RNase A treatment**
   If RNA-free genomic DNA is required, add 20 µl of RNase A Solution (DS0003), mix and incubate for 5 minutes at room temperature (15-25°C), then continue with step 4d.

5. **Lyse cells**
   Add 200 µl of Lysis Solution (C1) (DS0010), vortex thoroughly (about 15 seconds) and incubate at 55°C for 10 minutes. Continue with "DNA Isolation" procedure.

   NOTE: A homogeneous mixture is essential for efficient lysis.

E. <u>DNA Isolation</u>

This is a continuation of the procedure from the lysates prepared for gram negative bacteria, gram positive bacteria, yeast and alternative protocol for yeast.

1. **Prepare for binding**
   Add 200 µl of ethanol (95-100%) to the lysate and mix thoroughly by vortexing for few seconds.

   NOTE: A homogenous mixture is essential. A white precipitate may form on addition of ethanol. It is essential to apply all of the precipitate to the HiElute Miniprep Spin Column (Capped). This precipitate does not interfere with the DNA isolation procedure or with any subsequent application. Do not use alcohols other than ethanol because this may result in reduced yields.

2. **Load lysate onto HiElute Miniprep Spin Column (Capped) (DBCA03)**
   Transfer the lysate obtained from the above step onto HiElute Miniprep Spin Column (Capped) provided. Centrifuge at ≥6,500 x g (≈10,000 rpm) for 1 minute. Discard the flow-through liquid and place the spin column in same 2.0 ml collection tube (uncapped).

   NOTE: Use a wide bore pipette tip to reduce shearing of the DNA while transferring contents onto the column. It is essential to apply all of the precipitate to the HiElute Miniprep Spin Column (Capped). If the solution has not completely passed through the membrane, spin at a higher speed until all the solution has passed through. Centrifugation at full speed will not affect the yield or purity of the DNA.

3. **Prewash**
   Add 500 µl of Prewash Solution (PWB) (DS0031) to the column and centrifuge at ≥6,500 x g (≈10,000 rpm) for 1 minute. Discard the flow-through liquid and re-use the same 2.0 ml collection tube (uncapped) with the column.

4. **Wash**
   (Prepare Wash Solution Concentrate (DS0012) as indicated in General Preparation Instructions)
   Add 500 µl of diluted Wash Solution (WS) to the column and centrifuge for 3 minutes at maximum speed 12,000-16,000 x g (≈13,000-16,000 rpm). Discard the flow-through liquid and re-use the 2.0 ml collection tube. Centrifuge again at same speed for the additional 1 minute to dry the column. The column must be free of ethanol before eluting the DNA.

5. **DNA Elution**
   Place the column in a new 2.0ml collection tube (uncapped) and pipette 100 µl of the Elution Buffer (ET) (DS0040) directly into the column without spilling to the sides. Incubate for 1 minute at room temperature. Centrifuge at ≥6,500 x g (≈ 10,000 rpm) for 1 minute to elute the DNA. Transfer the eluate to a new capped 2.0ml collection tube for DNA storage.

   NOTE: To increase the elution efficiency, incubate for 5 minutes at room temperature after adding the Elution Buffer (ET), then centrifuge. Elution with volumes less than 100 µl increases the final DNA concentration in the eluate significantly, but slightly reduces the overall DNA yield. Storing DNA in water can cause acid hydrolysis.

Storage of the eluate with purified DNA: The eluate contains pure genomic DNA. For short-term storage (24-48 hrs) of the DNA, 2-8°C is recommended. For long-term storage, -20°C or lower temperature (-80°C) is recommended. Avoid repeated freezing and thawing of the sample which may cause denaturing of DNA. The Elution Buffer will help to stabilize the DNA at these temperatures.

Warning and Precautions

Not for Medicinal Use. Read the procedure carefully before beginning the protocol. Wear protective gloves/protective clothing/eye protection/face protection. Follow good laboratory practices while handling samples. Standard precautions should be followed as per established guidelines. Safety guidelines may be referred in safety data sheets of the product.

Limitations

1. The yield of DNA depends upon the type and the volume of starting material used.

Performance and Evaluation

Each lot of HiMedia's HiPurA® Water DNA Purification Kit is tested against predetermined specifications to ensure consistent product quality.

Quality Control

Type of Sample	DNA Purity
Lake water sample	1.6-1.9

References

1. Sambrook, J., *et al*. Molecular Cloning: A laboratory Manual, 2nd ed. (Cold Spring Harbor Laboratory Press, Plainview, NY, 1989).
2. Birren, B. and Lai, E. Pulsed Field Gel Electrophoresis: A practical guide (Academic Press, San Diego, CA, 1993).

Troubleshooting Guide:

Sr. No.	Problem	Possible Cause	Solution
1.	Lysozyme is difficult to dissolve	Solution is inadequately mixed.	Pipette repeatedly to dissolve the lysozyme as opposed to vortexing; as vortexing will cause foaming and reduce lysozyme solubility. Lysozyme may not dissolve readily; complete dissolution is not needed prior to use as it will dissolve during the 37°C incubation.
2.	HiElute Miniprep Spin Column (Capped) is clogged	Culture volume is large	Use smaller quantity of sample, to salvage the current preparation, clogging can be alleviated by increasing the g force or spinning for longer time until the lysate passes through the spin column.
3.	Lysate appears to be gelatinous prior to loading onto the column	Culture volume is large	Use fewer cells. The incubation time and or the amount of Proteinase K solution or Lysozyme solution can be increased, depending on which procedure is performed i.e. for Gram positive or Gram negative bacteria.

			eg: The incubation time and the amount of enzyme can be doubled.
4.	Poor / Lower yield of genomic DNA	Incomplete lysis of cells	The incubation time and or the amount of Proteinase K solution or Lysozyme Solution can be increased, depending on which procedure is performed i.e. for Gram positive or Gram negative bacteria. eg: The incubation time and the amount of enzyme can be doubled.
		Lysate/Ethanol mixture is not homogenous	Vortex the tubes for atleast 5-10 seconds in order to obtain a homogenous solution before applying it to the column.
		DNA elution is incomplete. Eluate contains residual ethanol from the wash	DNA yield can be improved by incubating the Elution Buffer for 5 minutes at room temperature (15-25°C) after it is added to the column. Ethanol from the final wash should be eliminated completely before eluting DNA. Spin the tubes for longer time to dry the column completely.
		Wash Solution Concentrate was not diluted before use.	Check that the Wash Solution Concentrate is properly diluted with ethanol as per instructions.
		Use of water instead of Elution Buffer for elution of DNA	Elution Buffer is recommended for optimal yields and storage of the genomic DNA. If water is used instead of the Elution Buffer, the pH should be at least 7.0 to avoid acidic conditions which may cause acid hydrolysis of DNA when stored for long periods of time. **NOTE:** Only DNase/RNase and Protease free water should be used for eluting DNA
		Background reading is high due to silica fines	The DNA sample can be centrifuged at maximum speed for 1 minute, the supernatant can be used to repeat the absorbance readings.
		Sample diluted in water	Use either Elution Buffer provided or 10 mM Tris-HCl, 0.5 mM EDTA pH 9.0 or 10 mM Tris-HCl pH 8.0-8.5 as the eluant.
6.	Purity of the DNA is lower than expected; A_{260}/A_{280} ratio is too high.	RNA contamination	RNase A treatment should be included in future isolations or the final product can be treated with RNase A and repurified.

7.	DNA is sheared	Improper handling of genomic DNA	All pipetting steps should be executed as gently as possible. Wide orifice pipette tips are recommended to eliminate shearing of the DNA to a large extent. If the isolated DNA is to be used for PCR, mix with gentle pipetting or invert until homogenous, instead of vortexing as it reduces shearing of DNA considerably.
		Cells are old	Cells grown for a longer time period may lyse prematurely when subjected to cell wall lysing enzymes, which may result in the release of endogenous nucleases and subsequent DNA degradation.
8.	Downstream applications are inhibited	Some water samples have high humic acid content which might inhibit PCR	1. It may be necessary to wash the spin column more than once to reduce humic acid contamination in the final sample. 2. If the DNA recovered at the end of the isolation procedure has a brown color, it may contain humic acid. Dilute DNA 10 fold prior to attempting PCR.
		Traces of ethanol present in the final genomic DNA preparation	After the washing steps, the flow-through should not come in contact with the column. Spin the column for 1 minute at maximum speed (12,000-16,000 x g) if necessary, after emptying the collection tube.
		Salt is carried over in the final genomic DNA preparation	The column should be transferred to a new capped 2.0 ml collection tube before adding the wash solutions.

Safety Information

The HiPurA® Water DNA Purification Kit is for laboratory use only, not for drug, household or other uses. The Lysis Solution (C1) contains chaotropic salts, which are irritants. Take appropriate laboratory safety measures and wear gloves when handling. Not compatible with disinfecting agents containing bleach. Please refer the Safety Data Sheet (SDS) for information regarding hazards and safe handling practices.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed off in accordance with current laboratory techniques.

Please refer disclaimer Overleaf.

Technical Assistance

At HiMedia, we pride ourselves on the quality and availability of our technical support. For any kind of technical assistance, mail to mb@himedialabs.com.

Symbols

	Manufacturer		Do not use if package is damaged
LOT	Batch code		Temperature limit
	Date of manufacture (YYYY-MM)		Consult instructions for use
	Use-by date (YYYY-MM)	REF	Catalogue number

Identification No.: PIMB547
Rev. No.: 09
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Disclaimer :

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