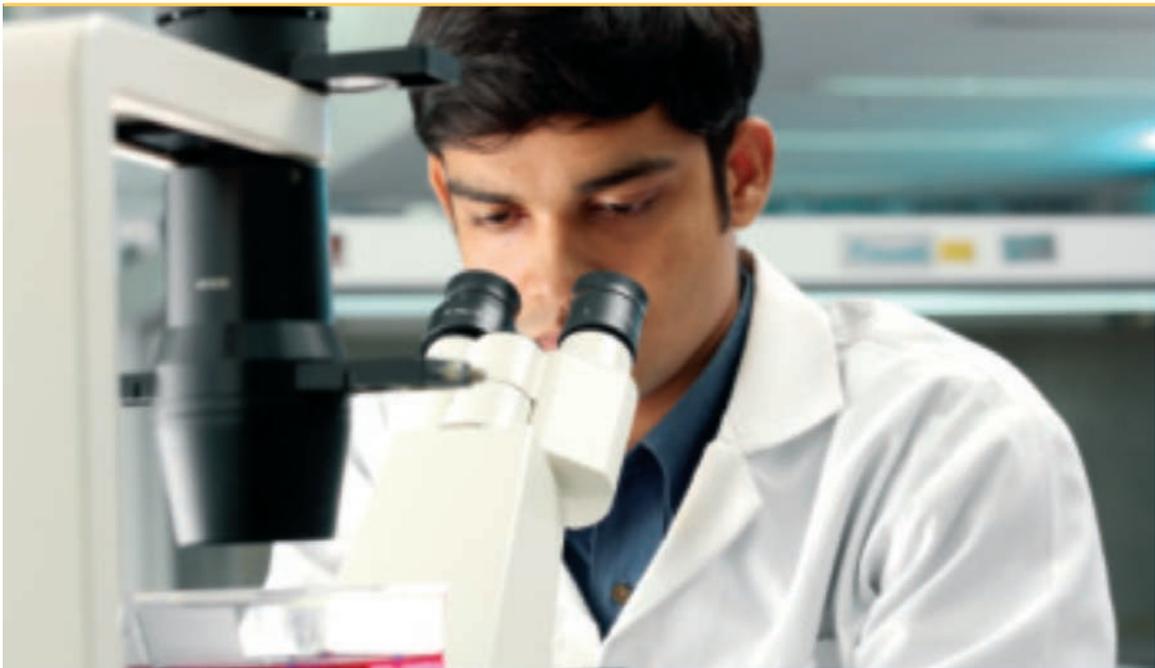




Sera for Cell Culture

About Us

*F*or over a decade, HiMedia has been supplying high quality sera products. The portfolio covers a wide range of sera including standard sera, specialty sera, animal sera and serum alternatives. HiMedia sources the serum from FDA and EQDM registered facilities that operate under strict cGMP guidelines, thus meeting the high standards required for quality cell culture. From collection of raw sera through to the final sterile filtered product, all processes are documented ensuring full traceability from the animal through to 'the bottle'. We ensure that every process from blood collection to filtration to final packaging is controlled. With our active role in the existing and emerging cell culture market, we are positioned to provide you with consistent, superior performance quality cell culture products to enable advances in life sciences research.



Serum and its origin

Serum is a ubiquitously used essential supplement for cell culture media. It is a cocktail of factors required for cell attachment, growth and proliferation and is thus used as an universal growth supplement effective for most types of human and animal (including insect) cells.

Serum is a complex product and only a small portion of the components have been fully identified. It remains the most effective and essential supplement to cell culture media.

The major functions of serum in culture media are to provide

1. hormonal factors stimulating cell growth and proliferation and promoting differentiated functions.
2. transport proteins carrying hormones (e.g. transcortin), minerals and trace elements (e.g. transferrin) and lipids (e.g. lipoproteins).
3. attachment and spreading factors, acting as germination points for cell attachment.
4. stabilising and detoxifying factors needed to maintain pH or to inhibit proteases either directly, such as α -antitrypsin or α 2-macroglobulin, or indirectly by acting as an unspecific sink for proteases and other (toxic) molecules.

The use of serum involves certain risks because of its ill defined nature, lot to lot inconsistency and as a potential source of microbial contaminants, such as fungi, bacteria, mycoplasma, viruses or prions. Since the first case of Bovine Spongiform Encephalopathy (BSE or Mad Cow Disease) was first reported in the UK in mid 1980's, the safety and regulatory requirements for sera have become far more stringent. Besides BSE, cattle can also be infected with Foot and Mouth, Herpes, Rabies and other viruses. Raw serum for our finished product is selected from sources where the risk of these diseases is absolutely minimal.

Serum origin refers to the country in which the raw blood was collected. This should not be confused with the country in which it was finally processed.

Serum producing countries are designated with a 'Geographical BSE Risk (GBR)' level. We specify the country of origin on the label of each serum bottle.

GBR Level	Presence of one or more cattle clinically or pre-clinically infected with the BSE agent in a geographical region/country
I	Highly Unlikely
II	Unlikely but not excluded
III	Likely but not confirmed or confirmed, at a lower level
IV	Confirmed, at a higher level

GBR I:

Australia, Argentina, New Zealand, Panama, Paraguay, Uruguay

GBR II:

Botswana, Brazil, Costa Rica, El Salvador, Namibia, Nicaragua, Norway, Sweden, Swaziland

GBR III:

Canada, Chile, Mexico, Republic of South Africa, USA

GBR IV:

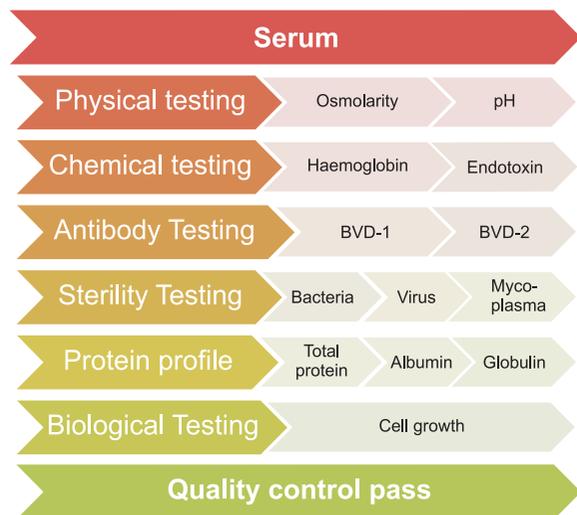
Portugal, United Kingdom*

Ref: As documented in assessment published by European Food Safety Authority (EFSA)

*: As documented in assessment published by Scientific Steering Committee

Quality control

All sera supplied by HiMedia undergo rigorous quality control before release to ensure that final product complies with the specifications. All lots of sera are subjected to comprehensive quality control tests that include sterility testing, virus detection, analysis of growth promotion capacity, protein profiling and physicochemical analysis. In addition biochemical analysis is available for certain sera.



Each lot of serum is tested for absence of bacterial and fungal contaminants using methods referenced in USP. Growth supporting capacity of serum is checked by analyzing its effect on cell growth and morphology. For making the sera suitable for applications such as synthesis of biological products, especially vaccines, all sera are tested for presence or absence of viruses using standard immuno fluorescence or checking the cytopathic effect. Physicochemical analysis comprises of testing for endotoxin (by LAL method) and hemoglobin levels. These parameters indicate quality of serum collection procedures. Thorough documentation such as certificate of origin, certificate of analysis and BSE-TSE free certificate are available upon request.

Sterility testing

Each lot of serum is tested for absence of bacterial and fungal contaminants using methods referenced in USP for sterility testing. This involves inoculation of sera in Tryptone soya broth and Alternate Thioglycollate broth for 14 days and checking for contamination with reference to appropriate controls.

Each lot is tested for:

- Aerobic bacteria
- Anaerobic bacteria
- Fungi
- Mycoplasma

Virus testing: Bovine Virus Diarrhea Virus (BVD-V)
Bovine Herpes Virus (BHV-1)
Parainfluenza Type 3 (PI-3)

Antibody testing: BVD-1 antibody titer
BVD-2 antibody titer

Physicochemical analysis

Parameters tested: pH
Osmolality
Endotoxin content by LAL method
Hemoglobin content

Protein profile: Total protein
Albumin
 α -Globulin
 β -Globulin
 γ -Globulin
IgG

Growth Promotion Test

Each batch of serum is tested for its ability to support *in vitro* growth of specific cell lines. Biological performance is assessed using cell culture medium supplemented with a final concentration of 10% serum. Each test is conducted using the test serum and a validated control lot. During the test period, cultures are examined microscopically for any morphological abnormalities that may indicate toxic components in the serum.

Biochemical analysis*

Enzymes: Serum glutamic pyruvic transaminase (SGPT)
Serum glutamic oxaloacetate transaminase (SGOT)
Alkaline phosphatase
Lactate dehydrogenase (LDH)
Gamma glutamyl transpeptidase

Lipids: Cholesterol
Triglycerides

Others: Bilirubin
Creatinine
Calcium
Potassium
Sodium
Iron
Phosphorus
Chloride
Glucose
Urea
Uric acid

* Applicable for selected types of sera

Storage, Shipping and Thawing

Storage and Shipping

All our sera are stored in controlled freezer rooms at -20°C and are shipped under frozen conditions in specially designed Styrofoam boxes. They are filled with sufficient amount of dry ice to maintain frozen conditions during transport. Upon receipt, sera must be stored at -10°C to -40°C away from bright light. Temperatures less than -40°C might lead to increased brittleness of the bottles resulting in breakage.

Multiple freeze thaw cycles should be avoided. Serum should never be stored in frost free freezers. Frost free appliances undergoes intermittent warming cycles to prevent ice deposits and this might lead to multiple thawing of serum.

To avoid multiple free thaw cycles or long periods of refrigeration, we recommend freezing small aliquots of sera which can be thawed and used as required.

Shelf life

Stability data has safely proven the efficacy of serum for at least 4 years. Thawed serum can be stored at 2-8°C up to eight weeks.

Thawing

Thawing of sera should be done as quickly as possible in order to minimize the period of time during which elevated salt concentration prevails in the thawed liquid.

1. Remove serum bottles from the freezer and allow them to acclimatize at room temperature for about 10 minutes or overnight in refrigerator.
2. Place the bottles at 37°C in a water bath or incubator.

Note: If placed in water bath ensure that the bottles do not float in water. Avoid exposing serum to elevated temperatures as this can lead to degradation of heat labile nutrients.

3. Swirl the bottle of serum frequently during thawing to disperse released salts and proteins uniformly in the liquid.
4. Swirl the bottle occasionally while working at room temperature in order to ensure that the liquid remains homogenous.

Note on Cryoprecipitate

We advise users to follow the recommended thawing procedure. Proper thawing with periodic agitation is crucial to a serum's optimum performance. If bottle of serum is not frequently swirled during thawing, the released proteins and salts tend to form crystalline or flocculent precipitates. These cryoprecipitates are not detrimental to the performance of serum but affect serum's appearance and consistency.

Slight turbidity or small amounts of flocculent material may be observed even if serum is thawed using the recommended procedure. This is normal in most serum products and will not affect its performance in any manner.

If the serum is not thawed properly, larger amounts of cryoprecipitate will form which is often insoluble. Filtering serum to remove cryoprecipitate is not recommended as it could result in loss of nutrients.

The selection of a serum supplement for cell culture applications is primarily dependent on the chemical definition of the basal medium, the type of cell to be grown, and the culture system being employed.

Fetal bovine serum, Standard quality

Fetal bovine serum, standard quality is one of the most regularly used serum and is suitable for many cell culture applications. This FBS is of high quality available at an exceptional value and in 5 categories of origin.

Applications

- Used as a growth supplement in cell culture media
- Used to neutralize Trypsin during cell dissociation process

Fetal bovine serum, EU Approved

This serum is sourced from countries approved for import into the European Union by the European Commission. Currently this includes Central and South America, USA, Canada, Australia, New Zealand and South Africa. This serum is collected and processed in facilities registered and inspected by the competent authority in the country of origin. EU approved serum can be freely moved between EU member countries and many other countries outside of Europe where USDA or FDA regulations are not required.

Product	Code	Volume
Fetal bovine serum	RM1112-100ML	100ml
Brazil origin, EU approved	RM1112-3X100ML	3x100ml
Gamma irradiated	RM1112-500ML	500ml
Sterile filtered	RM1112-5X500ML	5x500ml
Fetal bovine serum	RM10432-100ML	100ml
EU approved	RM10432-3X100ML	3x100ml
Origin: Brazil	RM10432-500ML	500ml
Sterile filtered	RM10432-5X500ML	5x500ml
Fetal bovine serum	RM9955-100ML	100ml
EU approved	RM9955-3X100ML	3x100ml
Heat inactivated	RM9955-500ML	500ml
Sterile filtered		

Fetal bovine serum, USDA Approved

This serum is sourced from countries approved for import into the United States by the USDA. Currently this includes Central America, Canada, Australia, New Zealand and Chile. These countries are documented by USDA as being free from exotic diseases, such as foot and mouth disease (FMD), Rinderpest and BSE. This serum is collected and processed in facilities registered and inspected by the competent veterinary authority in the country of origin.

Product	Code	Volume
Fetal bovine serum	RM9952-100ML	100ml
USDA approved	RM9952-500ML	500ml
Sterile filtered		
Fetal bovine serum	RM10681-500ML	500ml
USDA approved		
Heat inactivated		
Sterile filtered		
Fetal Bovine Serum	RM10847-500ML	500ml
Origin : Australia		
USDA Approved		
Sterile filtered		

Fetal bovine serum, Australia origin

Australian origin Fetal Bovine Serum (FBS) is collected only from AQIS (Australian Quarantine and Inspection Service) approved abattoirs in Australia. Australia is considered to be free of BSE and FMD and belongs to GBR 1 category. Australian-origin serum is most commonly used in the production of many human and animal biopharmaceuticals and is proven to support the needs of industrial biopharmaceutical manufacturers.

Product	Code	Volume
Fetal bovine serum Australia origin Sterile filtered	RM9951-100ML RM9951-500ML	100ml 500ml
Fetal bovine serum Australia origin Heat inactivated Sterile filtered	RM10679-500ML	500ml
Fetal Bovine Serum Origin : Australia USDA Approved Sterile filtered	RM10847-500ML	500ml

Fetal bovine serum, US origin

US origin serum is one of the most widely used serum in the world. Although US Origin FBS is considered the world's standard for quality, it is considered less safe in terms of geographical BSE risk. US stands 3rd in the GBR category demonstrating a moderate to high risk that BSE exists in the USA.

Product	Code	Volume
Fetal bovine serum Origin: US Gamma irradiated Sterile filtered	RM9970-500ML	500ml
Fetal Bovine Serum Origin : US Sterile filtered	RM10434-500ML	500ml
Fetal Bovine Serum Origin : US Heat inactivated Sterile filtered	RM10409-500ML	500ml

Fetal bovine serum, Canada origin

Canadian origin serum is sourced from approved abattoirs in Canada.

Product	Code	Volume
Fetal bovine serum Origin: Canada Sterile filtered	RM9954-500ML	500ml

Post Filtration Treatments

Specific types of sera are required for different applications in the extensively growing biopharmaceutical and biomedical industry. Such sera are obtained by post-treatment of the sera in order to make them suitable for specific applications. Some of these treatments eliminate viruses and other microorganisms, thereby increasing the biological safety, whereas other treatments remove various serum constituents that would otherwise interfere with certain assays or techniques. Heat inactivation and gamma-irradiation are the most frequently used post-treatments for serum.

Heat inactivation

The most common objective of heat inactivation is to destroy heat labile components such as complement that can lead to complement mediated cell lysis. The process involves heating the serum in a shaking water bath at exactly 56°C for 30 minutes. Shaking helps avoid formation of protein precipitates. After 30 minutes, serum is cooled down to room temperature to avoid excessive exposure to heat which can damage growth factors, vitamins etc. Complement proteins, antibodies and enzymes present in the serum are inactivated by heat inactivation.

Applications

- Suitable for immunoassays, enzyme assays and cytotoxicity assays
- For culture of insect cells

Product	Code	Volume
Fetal bovine serum EU approved Heat inactivated Sterile filtered	RM9955-100ML RM9955-3X100ML RM9955-500ML	100ml 3x100ml 500ml
Fetal bovine serum US origin Heat inactivated Sterile filtered	RM10409-500ML	500ml
Fetal Bovine Serum Origin : Australia Heat inactivated Sterile filtered	RM10679-500ML	500ml
Fetal Bovine Serum USDA Approved Heat Inactivated Sterile filtered	RM10681-500ML	500ml

Gamma irradiation:

Gamma irradiation is the preferred choice of the regulators to minimise the risk of viruses in animal-origin material. Gamma irradiation further reduces or eliminates wide range of viruses and mycoplasmas, which may be present in the serum after filtration, thus enhancing biological safety of the serum. This process involves exposing the serum to high energy gamma radiations released by radioisotopes such as Cobalt-60. Our gamma irradiated FBS is irradiated using validated protocols which protect sensitive growth factors and maintain the homogeneity of the serum.

Applications

- Suitable for use in production of biopharmaceuticals, virus and vaccine production

Product	Code	Volume
Fetal bovine serum Origin: Brazil, EU Approved Gamma irradiated Sterile filtered	RM1112-100ML RM1112-3X100ML RM1112-500ML RM1112-5X500ML	100ml 3x100ml 500ml 5x500ml
Fetal bovine serum Origin: US Gamma irradiated Sterile filtered	RM9970-500ML	500ml

Speciality sera

Fetal bovine serum, Charcoal treated

Charcoal stripping is the most effective method for removal of endogenous steroids from serum. The process involves filtering chilled serum through an activated charcoal adsorbent filter. Charcoal stripping removes non-polar factors present in the serum such as viruses, hormones, certain growth factors, cytokine and several other lipophilic substances. Extensive biochemical profile of the serum is done before and after the treatment to ensure efficacy of the treatment. Charcoal treatment may lead to reduction in growth promotion ability of serum, particularly for the cells that require the stripped compounds.

Applications

- Useful for *in vitro* research requiring low hormone levels for e.g. elucidation of effect of hormones in variety of *in vitro* systems
- Suitable for steroid-receptor binding, steroid regulation, lipid profiling studies wherein, endogenous lipophilic molecules may interfere with the experimental work

Product	Code	Volume
Fetal bovine serum EU approved Charcoal treated Sterile filtered	RM10416-500ML	500ml

Fetal bovine serum, Dialyzed

Dialyzed Fetal Bovine Serum is used in applications requiring a more defined environment. The process of dialysis results in depleting the serum of low molecular weight molecules (less than 10000 MW) such as nucleotides, amino acids, hormones, cytokines and salts. The serum is dialyzed against a solution of sterile PBS using a 10000 Dalton cutoff membrane.

Applications

- Cell culture systems requiring a defined environment.
- Ideal for non radioactive and radioactive incorporation studies

Product	Code	Volume
Fetal bovine serum Dialyzed Sterile filtered	RM10685-500ML	500ml

Fetal bovine serum, Tetracycline Negative

Tetracycline (Tet) tested serum is specifically qualified for use in Tet-inducible gene expression systems. The Tet-On and Tet-Off expression systems use a tetracycline-controlled transactivator which interacts with a promoter to regulate expression of the gene of interest. Fetal Bovine Serum often contains the antibiotic Tet and extraneous Tet results in unintended expression leading to erroneous results. Tet test is performed using a liquid chromatography electrospray ionization tandem mass spectrometry method. Tet negative serum contains less than 0.05µg/ml tetracycline.

Application

- Used for expression studies in Tet-On and Tet-Off expression systems

Product	Code	Volume
Fetal bovine serum EU Approved, Tetracycline negative Sterile filtered	RM10686-500ML	500ml

Stem Cell Tested Sera

Fetal bovine serum, ES cell tested

Embryonic stem cells are derived from embryos that develop from eggs that have been fertilized *in vitro*. Fundamental prerequisite in embryonic stem cell research is maintenance of undifferentiated state of the cells. ES cell tested fetal bovine serum is stringently validated for its ability to support colony formation and cell morphology while preventing adverse differentiation.

Applications

- Useful for *in vitro* culturing of undifferentiated ES cells
- Ideal for primary cells

Product	Code	Volume
Fetal bovine serum EU approved ES cell tested Sterile filtered	RM10435-500ML	500ml

Fetal bovine serum, MSC tested

Mesenchymal stem cells (MSC) are undifferentiated cells that have ability to differentiate into multiple lineages. A major challenge in culturing MSC is the difficulty to maintain them in undifferentiated state while avoiding their differentiation into unwanted lineage. Serum contains many unknown factors, nutrients and molecules in variable concentration that may lead to unwanted differentiation of stem cells.

MSC qualified sera are suitable for culturing MSC. They are prescreened for

- Clonal efficiency: Ability to form colonies in culture
- Expansion: Ability to proliferate and generate high cell densities without getting differentiated
- Differentiation potential: Ability to support adipogenic, osteogenic and chondrogenic differentiation under appropriate culture conditions

Prescreening saves time and money by eliminating the need to test multiple serum lots to identify the suitable one for MSC culture.

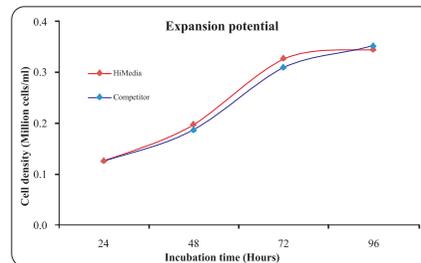


Fig 1 : Comparative performance of MSC tested FBS on expansion of mesenchymal stem cells

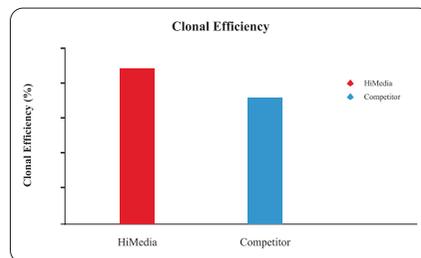


Fig 2 : Comparative performance of MSC tested FBS on clonal efficiency of mesenchymal stem cells

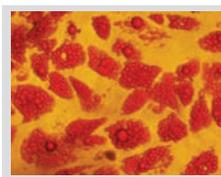


Fig 3 : Adipogenic differentiation of human adult MSC cultured in MSC tested FBS(40X)

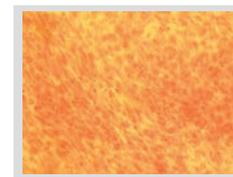


Fig 4 : Osteogenic differentiation of human adult MSC cultured in MSC tested FBS(40X)



Fig 5 : Chondrogenic differentiation of human adult MSC cultured in MSC tested FBS(40X)

Product	Code	Volume
Fetal bovine serum Mesenchymal Stem Cell Tested EU Approved, Sterile filtered	RM10832-100ML RM10832-500ML	100ml 500ml
Fetal bovine serum Mesenchymal Stem Cell Tested USDA Approved, Sterile filtered	RM10845-100ML RM10845-500ML	100ml 500ml
Fetal bovine serum Mesenchymal Stem Cell Tested Australia origin, Sterile filtered	RM10846-100ML RM10846-500ML	100ml 500ml

Bovine Sera: Alternative to FBS

Adult bovine serum

Adult bovine serum (ABS) is collected from adult cows brought to slaughter. The serum is separated from the blood of adult cows more than 12 months old by mechanical defibrination process. It contains more immunoglobulins and double the protein content compared to FBS. ABS has low hemoglobin content.

Applications

- Cost effective alternative to FBS
- As a control standard, dilution matrix and calibrating agent in immunoassays (ELISA) and *in vitro* diagnostic applications
- Useful in animal vaccine production and human health care industry

Product	Code	Volume
Adult bovine serum Sterile filtered	RM9981-500ML	500ml

New born calf serum

New born calf serum is processed from calves that are 3-10 days old. This serum is less expensive than FBS and hence can be used successfully as a cost-effective alternative. It contains more immunoglobulins and proteins and less growth factors than FBS.

Applications

- Cost effective alternative to FBS
- Useful in fermentation industries where large quantity of serum is required
- Useful as internal reference standard for quantitative protein assays such as double radial immuno-diffusion assay, ELISA, Western immunoblotting, electro-immuno-diffusion
- As a blocking agent or as a negative control in non-precipitating antibody-binding assays
- As a reference serum in nephelometry and other automated precipitation techniques

Product	Code	Volume
New born calf serum Heat inactivated Sterile filtered	RM10437-500ML	500ml
New born calf serum Gamma-irradiated Sterile filtered	RM10421-500ML	500ml
New born calf serum Sterile filtered	RM10422-500ML	500ml

Other Animal Sera

In case of autologous cell culturing system, the probability of rejection should be as low as possible and introduction of the foreign proteins in the system should be avoided. We therefore supply animal sera for common test species.

Horse serum

Horse serum is collected from controlled donor herds. This offers an advantage of lower endotoxin content and lower level of batch to batch variation. It is a cost-effective alternative to fetal bovine serum and supports growth of most mammalian cells. It has twice the protein content as compared to fetal bovine serum but is low in many trace elements that are required for optimal growth. When using horse serum, supplementing the basal medium with these trace elements can optimize the growth and counts of cells. Horse serum also contains certain additional growth factors compared to other animal sera. For certain hematopoietic cells like myeloid cells only horse serum provides necessary growth promoting factors.



Applications

- Cost effective alternative to FBS
- Ideal supplement in nutrient media used for *in vitro* growth of specific hematopoietic progenitor stem cells
- Primary neuronal culture
- Used as a supplement in growth and detection media for *Mycoplasma* spp

Product	Code	Volume
Horse serum	RM1239-100ML	100ml
Donor herd	RM1239-3X100ML	3x100ml
Gamma irradiated		
Sterile filtered		
Horse serum	RM10436-100ML	100ml
Donor herd	RM10436-3X100ML	3x100ml
Sterile filtered	RM10436-500ML	500ml
Horse serum	RM10674-100ML	100ml
Donor herd		
Heat inactivated		
Sterile filtered		

Pig serum

Pig serum is collected from animals younger than 1 year old. The constituents of human blood and porcine serum are similar, hence porcine serum is found to be very useful in lymphocyte culture work as well as in chromosome banding studies involving lymphocyte culturing.



Applications

- Used for culturing of mycoplasmas and viruses
- Used for culturing lymphocytes

Product	Code	Volume
Pig serum	RM10415-100ML	100ml
Sterile filtered	RM10415-3x100ML	3X100ml
	RM10415-1000ML	1000ml

Rabbit serum

Rabbit serum is collected from animals 6 months old or younger.



Applications

- Rabbit serum is mostly used for immunohistochemical blocking applications and cultivation of *Plasmodium falciparum*

Product	Code	Volume
Rabbit serum	RM10433-500ML	500ml
Sterile filtered		

Sheep Serum

Sheep serum is derived from clotted blood collected from healthy sheep by venipuncture.



Application

- Sheep serum is used as a blocking agent in immunoassays.

Product	Code	Volume
Sheep Serum Sterile filtered	RM10700-500ML	500ml

Goat Serum

Goat serum is derived from clotted blood collected from healthy donor goats.



Applications

- As a blocking agent and negative control in various immunoassays
- As an effective replacement of FBS for various biomedical research applications such as isolation and identification of viruses, *in vitro* cultivation of malarial parasite, cultivation of primary cells and cell lines, organ culture

Product	Code	Volume
Goat serum Sterile filtered	RM10701-500ML	500ml

Chicken Serum

Chicken serum is derived from clotted blood collected aseptically from healthy chicken.



Applications

- As a blocking agent in immunoassays
- As an effective and low cost alternative to fetal bovine serum for primary isolation, routine cultivation and mass cultivation of Leishmania parasites
- In serial cultivation of chicken keratinocytes

Product	Code	Volume
Chicken Serum Sterile filtered	RM10831-100ML	100ml

Rat Serum

Rat serum is collected from 8 - 12 week old sexually mature Sprague - Dawley rats



Applications

- As a blocking agent in immunohistochemistry
- In flow cytometry - to inhibit non-specific binding of rat monoclonal antibodies

Product	Code	Volume
Rat Serum Sterile filtered	RM10841-10ML RM10841-3x10ML	10ml 3x10ml

Mouse Serum

Mouse serum is collected from clotted blood collected aseptically from healthy mice.



Applications

- As a blocking agent in immunohistochemistry

Product	Code	Volume
Mouse serum Sterile filtered	RM10842-10ML RM10842-3x10ML	10ml 3x10ml

Troubleshooting

Problem	Possible cause	Solution
Precipitation or turbidity in the serum	Improper thawing procedure can lead to precipitation in serum	Follow the recommended procedure for thawing the serum
	Some amount of precipitate is normally observed after thawing the serum. This is fibrin and some lipoprotein fractions which is a natural characteristic of serum. Such cryoprecipitate is not detrimental to the performance of serum.	Allow the bottle to stand for sometime (at 2-8°C) and let the precipitate settle to the bottom of the bottle. Then transfer it to another sterile bottle.
	Multiple freeze-thaw cycles or storage of serum in a frost-free refrigerator.	Avoid multiple freeze-thawing of serum. Freeze small aliquots of serum as per the requirement. Do not store the serum in frost-free freezers. Frost free appliance undergoes intermittent warming cycles to prevent ice deposits and this might lead to multiple thawing of serum.
Partially thawed serum on receipt	Prolonged transit time	Let the serum defrost completely. Swirl the serum bottle gently and then re-freeze.
Jelly-like fraction at the bottom of serum bottle	Improper heat inactivation of serum or inactivation without intermittent mixing	Discard the serum. Thaw fresh bottle of the serum using recommended procedures. Perform proper heat inactivation.
Slow growth of cells	Use of HI serum does not promote the growth of slow growing or finicky cell lines.	Use non-heat inactivated serum.

Mesenchymal Stem Cell Tested Serum

Boost your stem cell culture performance and save valuable prescreening time

- Available in three origins – Australia origin; USDA Approved; EU Approved
- Tested on human mesenchymal stem cells
- Gives high clonal efficiency





Innovation
begins
with the
right
choices



Literature code : TL 236_1/sera for cell culture/0215



HiMediaLaboratories™

HiMedia Laboratories Pvt. Limited

A-516, Swastik Disha Business Park, Via Vadhani Indl. Est. LBS Marg, Mumbai - 400 086, India

Tel: 00-91-22-6147 1919 ■ Fax: 6147 1920, 2500 5764 ■ Email : info@himedialabs.com ■ Web : www.himedialabs.com

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For life is precious

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