



FETAL BOVINE SERUM (FBS)

Product Numbers **F2442, F3885, F4135, F3260, F0392, F0643, and F3018**

Storage Temperature -20°C

Product Description

Historically, fetal bovine serum has been the most widely used growth supplement for cell culture media because of its high content of embryonic growth-promoting factors. When used at appropriate concentrations it supplies many defined and undefined components that have been shown to satisfy specific metabolic requirements for the culture of cells *in vitro*.

Serum is an extremely complex mixture of many small and large biomolecules with different, physiologically balanced growth-promoting and growth-inhibiting activities. Some of the major functions of serum are to provide growth factors, hormones, attachment and spreading factors, binding proteins, lipids, and minerals.

Reagents

Source: FBS is derived from clotted whole blood or plasma, from donor source or abattoir.

Cell culture test: Biological performance is assessed using Sigma cell culture medium supplemented with the serum and tested at a final concentration of 10%.

Seeding efficiency, doubling time, and final cell density are measured on appropriate cell lines. Growth studies are carried through two subculture generations and cell growth is plotted as a logarithmic function of time in culture. During the testing period, cultures are examined microscopically for atypical morphology and evidence of cytotoxicity.

Precautions and Disclaimer

REAGENT: For Laboratory Use Only. Not for drug, household or other uses.

F2442: For In Vitro Diagnostic Use

Preparation Instructions

For use in cell culture media, supplementation with FBS ranges from 5-20%. Optimal concentration must be determined for each cell line and application.

Storage/Stability

Store at -20 °C. Serum should not be stored in a frost-free freezer, since temperature cycling may cause deterioration of product. Initially, serum may be thawed SLOWLY prior to use. We recommend thawing overnight at refrigerator temperature (2-6 °C). Complete thawing at room temperature (18-26°C).

Product Information

Turbidity or flocculent material may appear upon thawing or prolonged storage at refrigerator temperature. This is a normal occurrence common to most serum products and is not detrimental to its performance.

Deterioration may be recognized by any or all of the following: (1) microbial growth, (2) abnormal precipitate or (3) inability to promote or sustain growth when added to cell culture media under normal conditions.

Product Profile

The following are processing control and biochemical characterization tests performed by Sigma Chemical Company which document that collection, intermediate and final processing of FBS raw material are in compliance with industry standards:

Collection method: Aseptically collected via cardiac puncture or venipuncture, or by open collection.

Filtration: Processed using three 0.1 um filters. Final filtration step uses two 0.2 um filters.

Sterility: All sera are tested for the absence of aerobic and anaerobic bacteria, molds, fungi according to the methods of sampling and testing described in the current edition of United States Pharmacopoeia or the U.S. Code of Federal Regulations (CFR Title 9, Part 113, 1990).

Mycoplasma: Tested for mycoplasma by the large batch method (Barile) for 28 days.² Positive controls are inoculated and grown parallel.

Bacteriophage: Screened by plaque assay using sensitive strains of *E. coli* known to be good hosts for bacteriophages. Testing includes positive controls using bacteriophages.

Heat-inactivation: Heat-inactivation is performed at 56° C for 30 minutes (Product Nos. F4135, F3018).

Hybridoma testing: Hybridoma -tested serum has been shown to support mouse myeloma cells and hybridoma cells in culture (Product No. F2442).

Cloning efficiency assay: A cloning assay is performed on each lot of FBS at concentrations of 5% and 10%.

This assay verifies that each lot will support clonal growth of myeloma cells and/or fusion products.

Gamma-irradiation: Serum is exposed to 2.5-3.5 mRads (25-35 kGy) of radiation from a ⁶⁰Co source (Product No. F3885).

Dialyzed serum: Serum is dialyzed against 0.15 M NaCl. Dialysis is performed using 1000 or 10,000 molecular weight cut-off cartridge (Product Nos. F3260, F0392).

Endotoxin: Serum tested to determine levels of endotoxin. Testing is done by Gel-Clot LAL method or the Quantitative Chromogenic LAL method. The endotoxin standard used in both methods is standardized against USP reference endotoxin standard EC-5.

Hemoglobin: Serum hemoglobin concentration is determined by a colorimetric assay that measures the peroxidase activity of hemoglobin.

Electrophoretic identity: Examined for characteristic protein patterns on an agarose gel in barbital buffer at pH 8.6.

Total protein: Determined by electrophoresis.

SMA-24: Routinely performed on each lot of serum.

Viral testing: Serum is tested for the absence of viruses using the protocols stated in the Code of Federal Regulations (CFR) for ingredients of animal origin (CFR Title 9, Part 113, 1990). All tests are conducted on cultures that are grown a minimum of 21 days in medium supplemented with 15% test serum. Then subcultured at least twice during this period. Positive control cultures that have been inoculated with virus are tested in parallel. Cytopathic observations, fluorescent antibody staining, inclusion body staining and hemadsorption must result in non-detection in test results. Testing includes the following viruses: Bovine Viral Diarrhea (BVD), Bovine Adenovirus Type I & V, Bovine Parvovirus, Infectious Bovine Rhinotracheitis (IBR), Parainfluenza Type 3 (PI3), Rabies, and Reovirus.

References

1. Freshney, R.I., *Culture of Animal Cells: A Manual of Basic Technique*, 3rd ed., (John Wiley & Sons, Inc., 1994) pp. 90-91.
2. Barile, M.F. and J. Kern, *Proc. Soc. Exp. Biol. Med.*, 138, 432 (1971).

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