PRODUCT SPECIFICATION SHEET

Nu-Serum™ V Culture Supplement

Reduced serum and serum-free cell culture conditions are rapidly becoming requirements for state of the art research. While serum played an irreplaceable role in the early development of the ability to culture cells and tissues, it is now known that the high protein content of serum can complicate protein purification, virus production, purification and concentration, and the production and screening of monoclonal antibodies. Nu-Serum growth medium supplements provide low protein alternatives to newborn calf, fetal bovine, and other sera routinely used for cell and tissue culture. They contain a 25% serum base (in this case gamma irradiated serum) along with a standardized, consistent formulation of epidermal growth factor, endothelial cell growth supplement, insulin, transferrin, triiodothyronine, progesterone, estradiol 17-beta, testosterone, hydrocortisone, selenious acid, o-phosphorylethanolamine, glucose, amino acids, vitamins and other trace elements and nutrients contained in its Ham's F12 medium base.

Nu-Serum replacements have been used successfully on a large variety of human and animal cell types, many of which were previously difficult to grow. Examples of cell types grown in Nu-Serum include human and chick embryo fibroblasts,⁴ HeLa cells,⁵ mouse L cells,⁶ HepG2 human hepatocellular carcinoma cells,⁷ BALB/c3T3 cells,⁸ Cos cells,⁹ normal rat kidney cells,¹⁰ human respiratory epithelial cells,¹¹ rat and chick neurons,¹² osteoblasts and primary chondrocytes,¹³ human bladder carcinoma cells,¹⁴ human melanomas, and hybridomas derived from Sp/2 and NS-1 myelomas.¹⁵

For additional information on the use of Nu-Serum in production proteins, antibodies, or viral products, or in studies of in vitro cell differentiation and biochemistry, please request a Nu-Serum Product Applications Brief.

PRODUCT:   Nu-Serum V Culture Supplement
CATALOG NUMBER:  355505    LOT NUMBER: 46349
QUANTITY:     500 milliliters
FORMULATION:  25% Fetal Bovine Serum which has been gamma irradiated with 2.5-3.0 megarads Cobalt 60. The purpose of this irradiation is to eliminate any active virus contamination in the serum. Remaining 75% consists of a proprietary formulation of the supplements listed above, formulated in Ham's F12 medium.
SOURCE:   Epidermal Growth Factor (mouse, natural), Endothelial Cell Growth Supplement (bovine, natural), Insulin (human, recombinant), Transferrin (human, natural)
NOTE:    Any of the human source material used in the manufacturing of this material was tested and found nonreactive for hepatitis B surface antigen (HBsAG), for antibody to hepatitis C virus (anti-HCV), for antibody to human immunodeficiency virus-1 (anti-HIV-1) and for antibody to human immunodeficiency virus-2 (anti-HIV-2). Regardless of the test data this product should be handled observing the same Universal Safety Precautions employed when handling any potentially infectious material.
USE:    Thaw Nu-Serum V Culture Supplement in a 37°C water bath. A small amount of precipitate may be present. This is normal and will not affect the potency of the product. If you will not be using the product all at once, dispense into appropriate aliquots and freeze at -20°C.
NOTE:    The serum used in Nu-Serum V Culture Supplement has not been heat inactivated. If you wish to do so, heat Nu-Serum V Culture Supplement in a 56°C waterbath for 20 minutes to inactivate complement.

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Supplement your basal medium with Nu-Serum V Culture Supplement exactly as you would with other sera. If physiological pH is not maintained during subculture procedures or periods of active cell proliferation, the addition of Hepes buffer to Nu-Serum V Culture Supplement supplemented culture medium to a final concentration of 10 to 15 millimolar is recommended.

Trypsinization Precaution
Nu-Serum V Culture Supplement contains 25% (by volume) newborn bovine serum and thus a reduced level of anti-trypsin activity. To maximize cell attachment and growth, use dilute or trypsin/EDTA solution when subculturing cells. After the cells have detached, stop the trypsin action with 1.2 to 1.5 mls undiluted Nu-Serum V Culture Supplement per 5 ml 0.05% trypsin/0.002% EDTA.

ENDOTOXIN: 0.25 Endotoxin units per milliliter

QUALITY CONTROL:

Physical Properties:
total protein 7.125 milligrams per milliliter (by A_{280})
pH: 7.29
osmolarity: 311 milliosmoles/L

Bioactivity
Nu-Serum™ V Culture Supplement used at a concentration of 10% successfully stimulates a > 100 fold increase in growth of BHK-21 cells, and a > 13 fold increase in growth of Balb/c3T3 cells.

STERILITY: Nu-Serum V Culture Supplement is a membrane filtered (0.2 micron) solution. It was tested and found negative for the presence of viruses, mycoplasma, bacteria, and fungi. Tests performed and results obtained are described below.

VIRUS TESTING:

Fluorescent Antibody Staining
Negative by fluorescent antibody staining directed against bovine virus diarrhea, bovine parvovirus, bovine adenovirus, reovirus and rabies viral antigens in cultures of Vero cells and bovine kidney or testicle cells grown for 24 - 28 days with Nu-Serum V Culture Supplement.

H & E Staining
No inclusion bodies or other cellular abnormalities detected by hematoxylin and eosin staining Vero cells and bovine kidney or testicle cells growth for 24 - 28 days with Nu-Serum V Culture Supplement.

Cytopathogenic Effects
No appearance of cytopathic effects in cultures of Vero cells and bovine kidney or testicle cells grown for 24 - 28 days with Nu-Serum V Culture Supplement.

Hemadsorption
No erythrocyte adsorption (equivolume mixture of human type O, guinea pig, and chicken erythrocytes) to a monolayer of Vero cells and bovine kidney or testicle cells grown for 24 - 28 days with Nu-Serum V Culture Supplement.

MYCOPLASMA

Cell Culture Test
No evidence of mycoplasma by DNA fluorochrome staining of mycoplasma-sensitive cell line grown over multiple passages with Nu-Serum V.
"Large Volume" Broth/Agar Test
No evidence of mycoplasma following incubation of Nu-Serum V Culture Supplement in broth and agar (procedure adapted from Barile and Kern, PSEBM 138:432, 1971).

BACTERIA AND FUNGI

No bacteria or fungi detected on incubation of Nu-Serum™ V Culture Supplement in fluid thioglycollate (anaerobic) and brain heart infusion (aerobic) media for 21 days at 30/37°C.

STABILITY:
Nu-Serum V Culture Supplement is stable a minimum of 3 months from day of shipment when stored at -20°C.

REFERENCES:

FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.

Use restriction for Europe and the United Kingdom:  This product may only be used as in in-vitro laboratory reagent.  This product and its residue must not be allowed to come into contact with ruminating animals or swine.

California Proposition 65 Notice
WARNING: This product contains a chemical known to the state of California to cause cancer, birth defects and/or other reproductive harm.

Component: Progesterone, Testosterone, Estradiol, Streptomycin Sulfate