

Tissue Culture Biologicals, Inc.

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CERTIFICATE OF ANALYSIS

| | |
|--|---------------------------|
| FETAL BOVINE SERUM | Country of Origin: |
| 0.1 micron Aseptically Filtered | |
| Catalog # 101 | Date Manufactured: |
| Lot # | Storage: ≤ -20°C |

Fetal Bovine Serum is collected in USDA inspected facilities and processed by Tissue Culture Biologicals in compliance with current Good Manufacturing Practices.

Appearance: Clear, amber to reddish amber colored fluid.

Sterility: No evidence of bacterial or fungal contamination after 14 days testing on fluid thioglycollate and soybean-casein digest media according to CFR title 9 part 113.26 and the U.S. Pharmacopeia <71>.

| TEST | RANGE/UNITS | RESULT |
|-----------------------|------------------------------------|--------|
| Hemoglobin | Less than 25 mg/dl (mg%) | |
| pH at 25°C | 6.7 – 8.1 | |
| Osmolality | 260 – 330 mOsmoles/Kg water | |
| Total protein | 3.0 – 4.5 g/dL | |
| Gamma globulin | Less than 10% of the total protein | |
| Endotoxin | Less than 10 EU/ml (LAL gel clot) | |

Biochemical Analysis:

| TEST | RESULTS | RANGE/UNITS | TEST | RESULTS | RANGE/UNITS |
|-----------------------|---------|------------------|---------------|---------|------------------|
| Alkaline phosphatase | | <700 IU/L | Calcium | | 9 – 15 mg/dL |
| ALT (SGPT) | | <10 IU/L | Phosphorus | | 5 – 15 mg/dL |
| AST (SGOT) | | <50 IU/L | Chloride | | 90 – 110 mMol/L |
| GGT | | <10 IU/L | Potassium | | 8 – 20 mMol/L |
| Total Bilirubin | | <0.1 – 1.0 mg/dL | Sodium | | 125 – 150 mMol/L |
| BUN | | 10 – 25 mg/dL | Uric acid | | 0.5 – 4.0 mg/dL |
| Creatinine | | 1.6 – 4.3 mg/dL | Triglycerides | | <100 mg/dL |
| Cholesterol | | 10 – 60 mg/dL | Serum Iron | | 100 – 300 µg/dL |
| Lactate dehydrogenase | | <1000 IU/L | Glucose | | 30 – 150 mg/dL |

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Mycoplasma: None detected by the indirect DNA bisbenzimidazole fluorescent staining method described in 'Mycoplasma Infection of Cell Cultures' G.J. McGarrity, D.G. Murphy and W.W. Nichols, eds., New York Plenum Press, 1978 and by J.R. Chen, Exp. Cell Res. 1977, 104:205.

Adventitious Viral Agents: Eleven day Quicktest

| | |
|---|--------------|
| Cytopathic effects (CPE) | Non Detected |
| Bovine Viral Diarrhea Virus (BVD) | Non Detected |
| Infectious Bovine Rhinotracheitis Virus (IBR) | Non Detected |
| Parainfluenza Virus Type 3 (PI 3) | Non Detected |

Antibody Serum Neutralization Titer:

| | |
|------|----------|
| BVD | Reported |
| IBR | Reported |
| PI 3 | Reported |

Electrophoretic Profile:

| | | | |
|---------------|----------------|-----------------|-----------|
| Total Protein | 3.0 – 4.5 g/dL | Gamma globulin: | <0.4 g/dL |
| Albumin | 1.4 – 3.4 g/dL | A/G Ratio: | Reported |

Growth Promotion: Shows the ability of the serum to support the growth of a cell line using a standardized inoculum, in a minimal medium supplemented with 10% serum. After three (3) passages the ratio of cell yield (harvest) to cells inoculated (plant) is calculated.

Cell Line:
Passage 3, population doubling: _____ Relative Plating Efficiency: %

Signed by: _____ Date: _____ Reviewed by: _____ Date: _____