

EQUAFETAL®

Product Description

Equafetal is a foetal bovine serum (FBS) substitute derived from the serum of bovine animals, collected following birth and which has been tested to meet FBS specifications. This serum is highly similar to FBS, intended to be used as an FBS substitute. This product has been shown to have equivalent performance on a selection of commonly used cell lines.

EquaFETAL® is a bio-equivalent solution offering stable pricing, lot-to-lot consistency, above average and exceptional raw material traceability and equivalent performance when compared to standard FBS. The serum is derived from animals in herds located within the United States and are certified as having no reportable diseases and have been deemed fit for human consumption through USDA ante-and post-mortem inspection.

This product is manufactured in an FDA-registered facility licensed for the manufacture of *in vitro* diagnostic reagents, utilising current Good Manufacturing Practices (cGMP). This product is triple 0.1 micron filtered.

EquaFETAL® does not contain additives and is comprised of pure bovine serum from animals maintained on controlled diets and living conditions. EquaFETAL® is collected from animals using a standardized protocol. It is derived entirely from bovine with no other additives and 100% US origin.

EquaFETAL® may be used as a direct FBS bio-equivalent. As with FBS, the performance of EquaFETAL® will depend on the cell type, media and culture conditions. Samples of EquaFETAL® are available for batch testing in the same way as lots of FBS are tested for suitability and performance.

Specifications

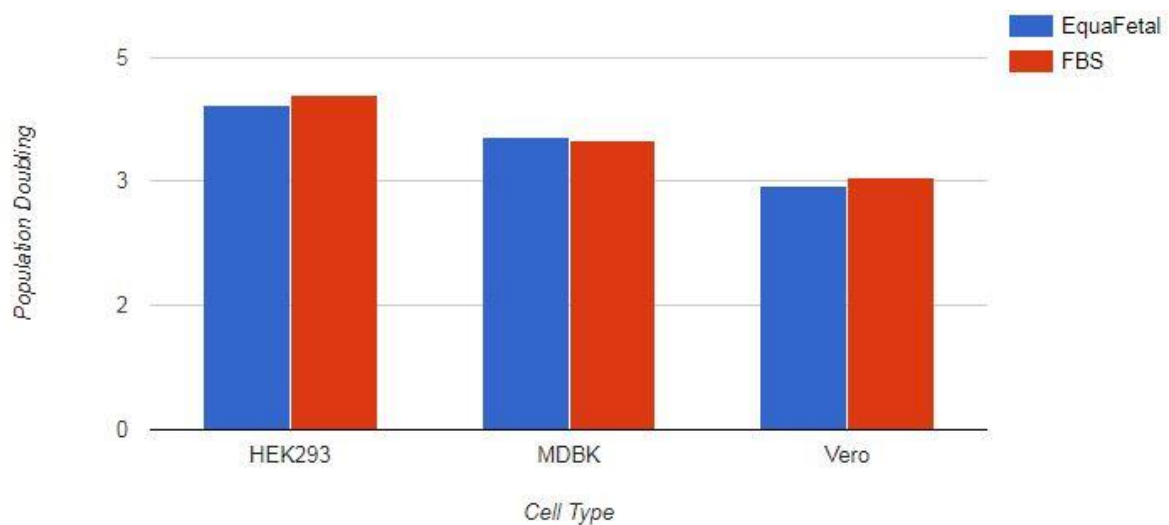
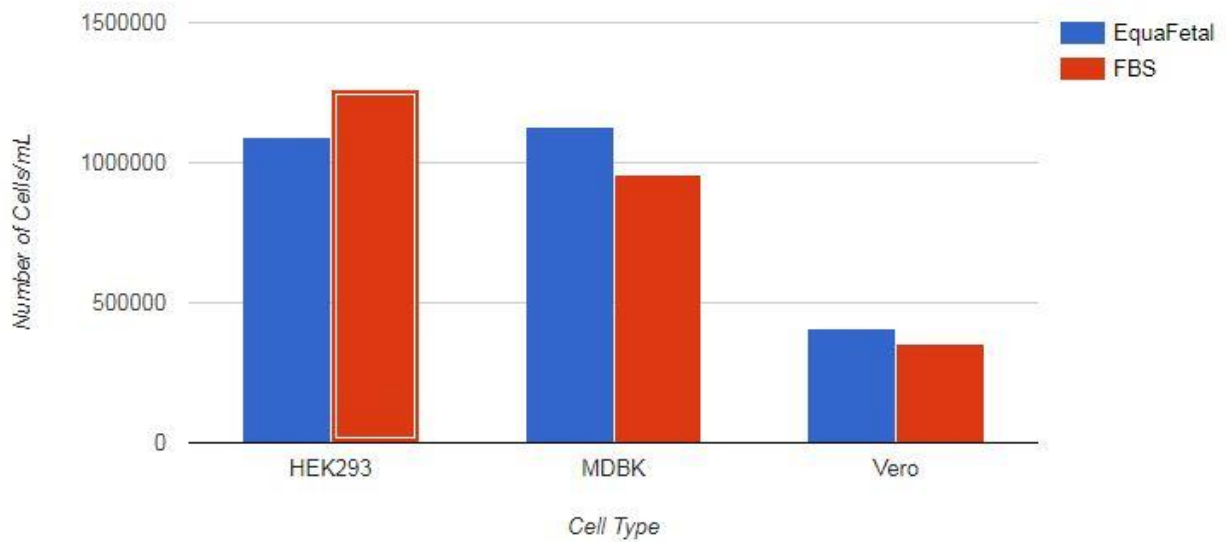
Quality Assurance testing precedes the release of a batch for sale. Full batch documentation can be provided including Certificates of Origin, Certificates of Analysis showing country of origin, and batch filtration records.

Country of Origin	United States
Sterility	Each batch of sera is tested for the absence of bacteria, fungi, yeast and Mycoplasma.
Viral Testing	Sera is tested for Blue Tongue Virus, Bovine Viral Diarrhoea Virus (BVD-V), Bovine Parainfluenza-3 virus (PI3), Infectious Bovine Rhinotracheitis (IBR) and Bovine Viral Diarrhoea Virus antibodies (BVD-AB).
Endotoxin	All sera are tested to determine the levels of endotoxins using the Limulus amebocyte lysate test (LAL).
Growth promotion	Biological performance of final batches of sera is assessed for cell growth, plating efficiency and cloning efficiency.
Mycoplasma	Each batch is tested using the Large Volume Barile Method (Barile, M.F. & Kern, J. (1971) Proc. Soc. Exp. Biol. 138: 432-437).

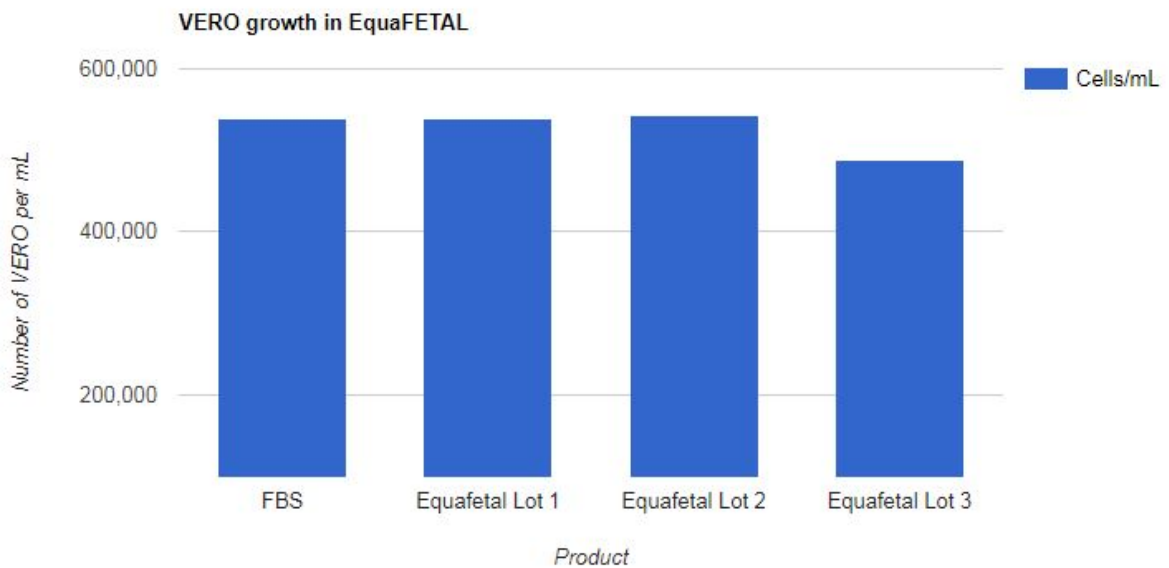
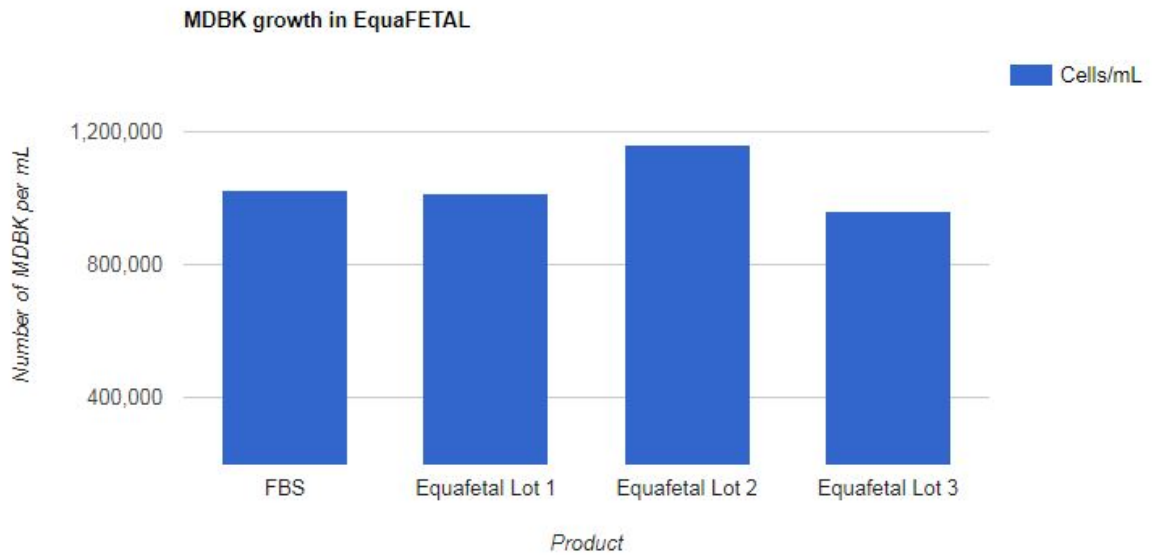
Filtration	EquaFETAL® is filtered through three sequential 100 nm (0.1 µm) pore size-rated filters.
-------------------	--

Comparative data

HEK 293, MDBK, and Vero cells were cultured in the presence of 10% FBS and 10% EquaFETAL® in DMEM with L-Glutamine for three passages. Cell seeded 4e4 to 6e4 per cm2 for each passage. Cell counts were determined using countess automated cell counter. In the results below population doubling is shown for FBS and EquaFETAL® from passages 1-3. Variation among column means is not significantly greater than expected by chance.



Three separate lots of EquaFETAL® were evaluated for cell growth. MDBK, and Vero were cultured in the presence of 10% FBS and 10% EquaFETAL® in DMEM with L-Glutamine for three passages. Cell seeded 4e4 to 6e4 per cm2 for each passage. Cell counts were determined using Countess automated cell counter. Cumulative average number of cell per mL shown for FBS and EquaFETAL® for passages 1-3. Variation among column means is not significantly greater than expected by chance.



Product Information

Product Code	Product Description	Pack Size
EQ-001A-US	EquaFETAL [®] Bovine Serum - Sterile Filtered	500 mL
EQ-001A-HI-US	EquaFETAL [®] Bovine Serum - Sterile Filtered - Heat Inactivated	500 mL
EQ-001A-GI-US	EquaFETAL [®] Bovine Serum - Sterile Filtered - Gamma Irradiated	500 mL
EQ-001C-US	EquaFETAL [®] Bovine Serum - Sterile Filtered	50 mL

Cell Lines

EquaFETAL[®] has been evaluated and found to be suitable to support the growth of the following cell lines:

Cell Lines	Description
3T3 L1	Mouse Embryo Fibroblast
A-375	Human Melanoma
A-549	Human Lung Adenocarcinoma
Adipose Cells (Adipocyte)	Generic for any fat-storing cell. White (Adult), Brown (Baby)
AR42 J	Rat Exocrine Pancreatic Tumour
B Cells / B Lymphocytes	White Blood Cell
BEAS-2B	Human Lung
Bone Marrow Stromal Cells	Human and Mouse Bone
BxPC-3	Human Pancreas Adenocarcinoma
C57BL / 6	Mouse Embryonic Endothelial Cell
Cardiac Stem Cells	Human Heart
Cardiomyocytes	Cardiac Muscle
Cartilage & Connective Tissue	Human Bone
Chondrocytes	Any one of the polymorphic cells that form the cartilage of the body
COLO 205	Human Colon
COS-7	African Green Monkey Kidney (SV40 transformed)
COV434	Human Ovary Tumour
Dendritic Cells	Antigen-Presenting Cell (APC)
EoL-1	Human Eosinophilic Leukaemia
Equine Mesenchymal Stem Cells	Horse Stem Cell
Fao	Rat Carcinoma

H23	Human Lung, Adenocarcinoma; Non-Small Cell Lung Cancer
H441	Human Lung, Papillary Adenocarcinoma
H1299	Human Lung Carcinoma; Non-Small Cell Lung Cancer
H1650	Human Lung Tumour, Adenocarcinoma; Broncho-alveolar Carcinoma
H2009	Human Lung Tumour; Adenocarcinoma
HCT 116	Human Colon
HEK 293	Human Embryonic Kidney
HeLa	Human Cervix
HL-60	Human Peripheral Blood
HMVII	Human Vaginal Melanoma
HT-1080	Human Fibro-sarcoma
HT-29	Human Colon
HT-55	Human Colon Carcinoma
Human Adipose Stem Cells	Human Fat Derived
Human Amniocytes	Human Foetal Cells
Human Epithelial Cells	Cells that line hollow organs and glands
Human Liposarcoma Cells	Cancer Tumour Cells
Human Lung Endothelial Cells	Human Lung
Human Stromal Cells	Connective Tissues
HUVEC	Human Umbilical Vein Epithelial cells
IMR 32	Human Neuroblast (Brain)
J774A.1	Mouse Macrophage
JeKo-1	Human Peripheral Blood
Jurkat E6.1	Human Peripheral Blood
K-562	Human Bone Marrow
L 929	Subcutaneous Connective Tissue; Areolar And Adipose
Leukocytes	White Blood Cells
Lymphocytes	Specialized White Blood Cells
MAEC	Mouse Aorta Endothelial Cells
MAPC	Multipotent Adult Progenitor Cells
MDA-MB-231	Human Mammary Gland
MDBK	Madin Darby Bovine Kidney
MEF	Mouse Embryonic Fibroblast
MG-63	Human Bone (osteosarcoma)
MIA PaCa-2	Human Pancreas Epithelial Carcinoma
Mino	Human Peripheral Blood/Mantle
Mouse Adipose Cells	Mouse Fat Cell
Mouse Neuroblastoma	Mouse Tumour

Mouse Primary Lung	Mouse Lung
Mouse Primary Spleen	Mouse Spleen
Mouse Progenitor Cells	Mouse Stem Cell
MSC	Mesenchymal Stem Cells
NB2-11	Rat Lymphoma
Nthy-ori 3-1	Human Thyroid
OE19	Human Oesophageal Carcinoma
OE33	Human Oesophageal Carcinoma
PANC-1	Human Pancreas
PBMC	Peripheral Blood Mononuclear Cell
PC-12	Rat Adrenal Gland
PC-3	Human Prostate
PNT1A	Human Prostate
PNT2	Human Prostate (transformed)
Primary Airway	Human Airway Epithelial
Primary Cortical Neuron	Human Nerve
Primary Human Fibroblasts	Human Foreskin
Primary Motor Neuron	Human Nerve
QT 35	Japanese Quail
RAW 264.7	Mouse Macrophage
RCC4 plus VHL	Renal cell carcinoma cell line RCC4 stably transfected with pcDNA3-VHL
REC-1	Human Lymph Node
Saos-2	Human Bone (primary osteosarcoma)
Schwann Cells	Peripheral nerve cell that produce the myelin sheath around axons
SK-OV-3	Human Ovary
Smooth Muscle Cells	Human Muscle
SP2/0-Ag14	Mouse Spleen (B Cell)/Mouse Myeloma
SP-53	Human Mantle Cell Lymphoma
SW 872	Human Liposarcoma
THP 1	Human Peripheral Blood
TK-6	Human Lymphoblast (myelogenous leukaemia)
U-2 OS	Human Bone
U937	Human Lymphoma
VCaP	Human Prostate
Vero	African Green Monkey Kidney
WI 38	Human Foetal Lung

EquaFETAL® has been evaluated for the following cell lines and the results did not show any improvement over standard FBS:

Cell Lines	Description
Caco2	Human Colon
HEK293T	Human Kidney (transformed)
High-5	Insect Ovarian Cells
Jurkat	Human T Lymphocyte Cells
MA-10	Mouse Testes Tumour
MCF-7	Human Breast Tumour
MDCK	Madin Darby Canine Kidney
RK13	Rabbit Kidney
Sf9	Insect Ovary
Sf21	Recombinant protein production insect cell line
T-Cell	Human T-Cell, White blood cell

Batch Sampling

LSP offer samples of FBS for testing prior to selection of a suitable batch. Typical sample size is 50 mL and reservations are held for a period of four weeks, pending evaluation.

Additional Treatments

FBS is also available heat inactivated, gamma irradiated, dialysed and charcoal stripped.

Heat Inactivation: Sterile filtered serum is heated to 56°C for 30 minutes with continuous agitation. This process will inactivate various components of the serum including complement factors which can interfere with certain immunoassays. However, the routine treatment of serum is not desirable for all applications, so it is recommended to test the benefit of heat inactivation prior to having a batch treated in this way. Heat inactivation can increase the presence of precipitates and may also impede the growth enhancing properties of the FBS.

Gamma Irradiation: Can be used as part of the sterilisation process. After the serum has been sterile filtered, it is bottled and then exposed to 2.5-3.5 mRads (25-35 kGy) to guarantee freedom from micro-organisms. Some bovine viral species are resistant to gamma-irradiation, such as parvovirus. As the gamma irradiation is carried out in the final packaging vessels, it will cause both glass and PETG bottles to darken in colour. It can also impair the efficiency of the serum and reduce shelf life.

Shelf life

FBS has a shelf life of 5 years from the date of manufacture, provided it is stored appropriately. We would recommend enquiring about the shelf life of each available batch if it is important to have a long shelf life following purchase.

While there may be a drop off in growth promotion properties over time, the level of any change will depend on the cell type and assay conditions. Therefore, should a batch of serum be coming up to its original expiry date and it is still performing adequately, rather than destroy the material, APS is happy

to extend the expiry date by 12 months. This re-test may be performed on a rolling 12 month basis. This means that the considerable time and investment in batch testing of a large batch of material need not be wasted should the supply last longer than forecasted.

Storage & Handling

Recommended storage is -20°C or below.

Protect serum from exposure to light.

It is recommended to avoid freeze-thaw cycles as this can lead to a deterioration in serum qualities. Ideally, material should be thawed under controlled conditions and re-aliquoted into smaller volumes before re-freezing. It is not recommended to store or refreeze partially used serum as degradation is rapid if microbial contamination occurs. All biological material should be handled as potentially infectious. It is essential that universal precautions should be employed when handling FBS.

Shipping

Product ships frozen on dry ice.

Support

Life Science Production is a division of Life Science Group Ltd.

Life Science Production is [ISIA Traceability Certified](#)

Life Science Group Ltd is an ISO 9001:2015 Certified company

To learn more, contact us:

Telephone: +44 (0) 1234 889180

Email: sales@lifesciencegroup.co.uk

Website: www.lifescienceproduction.co.uk

Address: PO Box 1519, Bedford, United Kingdom

