



JSBio Product Guide— Human and Veterinary Vaccines



About

JSBio stands as a forefront player in the high-tech sector, specializing in cell culture technologies, product development, manufacture, and distribution. Our premium-quality cell culture media find broad application across domains including biopharmaceuticals, biochemical reagents, human and veterinary vaccines. In terms of manufacturing prowess, we operate three state-of-the-art facilities, each adhering to cGMP standards, strategically situated in Lanzhou, Nantong in China, and Busan, South Korea. Collectively, these sites harness the capability to produce thousands of tons annually. Our commitment to excellence extends deeply into our quality assurance systems, where we enforce the industry's most stringent international benchmarks. This dedication has earned us accreditations under ISO13485 and ISO9001, alongside completing registrations for Class I Medical Devices and DMF. Regarding raw material sourcing, we employ a meticulous, science-driven process for selecting both materials and suppliers. This ensures that our media, particularly those intended for human biological product manufacturing, are crafted from ingredients that fully comply with the specifications outlined in the Chinese Pharmacopoeia, the United States Pharmacopeia, the European Pharmacopoeia, and the Japanese Pharmacopoeia, thereby upholding the utmost in product integrity and safety.

Strengths

- TSE/BSE Declaration Available
- Compliant with cGMP Manufacturing Standards
- Consistent Batch-to-Batch Performance
- Versatile Packaging Options
- Marked Enhancement in Product Yield
- Three Global Manufacturing Facilities
- Ensuring Swift and Reliable Supply
- Customizable Catalog Culture Media Components



This guide is designed to assist in the selection of JSBio's cell culture media tailored for human and veterinary vaccine production, encompassing media for BHK-21 cells, insect cells, LMH cells, MDCK cells, PK-15 cells, ST cells, F81 cells, and Vero cells. Each of these media formulations has been validated through extensive customer usage, demonstrating exceptional performance in facilitating high-density and high-viability growth of host cells, which in turn leads to a substantial increase in vaccine yields.

Packaging specifications

For your personalized needs, we offer the following regular packaging options for each product:

Form	Package materials	Package
Dry powder	Aluminum foil bag, PP bucket	2 L, 10 L, 50 L, 100 L, Customized
Liquid	PET Bottle	250 mL, 500 mL, 1000 mL

Content

- BHK-21 Cell Culture Media
- Insect Cell Culture Media
- LMH Cell Culture Media
- MDCK Cell Culture Media
- PK-15 Cell Culture Media
- ST Cell Culture Media
- F81 Cell Culture Media
- Vero Cell Culture Media



BHK 21 Cell Culture Media



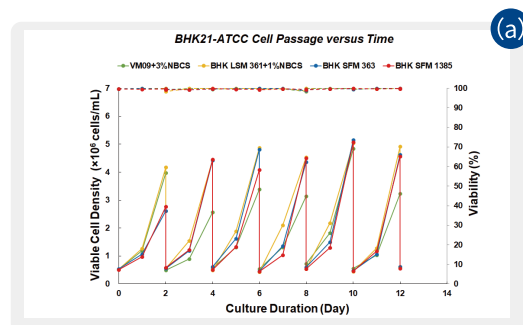
Designed for BHK-21 cells, JSBio BHK Cell Culture Media support high-density suspension culture of BHK-21 cells and enable efficient production of viruses such as foot-and-mouth disease and pseudorabies, including low-serum media, serum-free media, and virus production enhancers.

Product Catalog

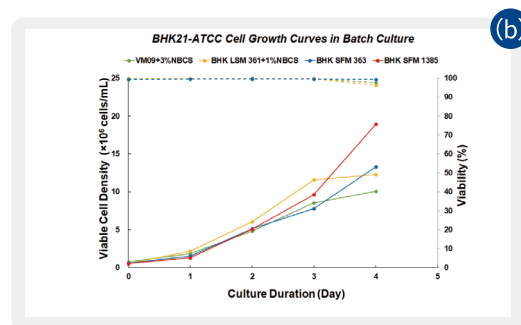
Product	Catalog No.	Form	Package	Description
VM09	77013-228	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Low-serum culture medium, used in combination with 3% serum
BHK LSM 361	77020-361	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Low-serum culture medium, used in combination with 1% serum
BHK SFM 363	10302-363	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum-free medium
BHK SFM 1385	10302-1385	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum-free medium
BHK PM 835	10304-835.1	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Maintenance solution
Feed F (10000X)	99154-23010	Liquid	100 mL, 500 mL	Virus Enhancer
Feed V (10000X)	99154-23009	Liquid	100 mL, 500 mL	Virus Enhancer

Case Study

Growth of BHK-21 Cell

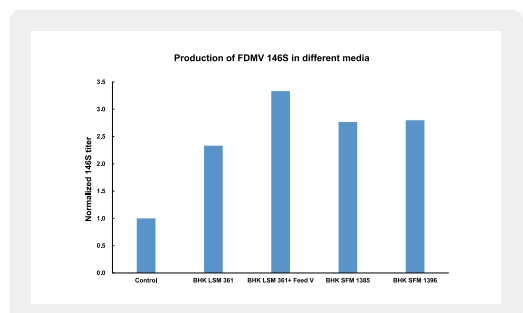


Passage of BHK-21 cells in different series of culture media



Passage of BHK-21 cells in different series of culture media and their growth curve analysis

Case Study on Virus Production



Insect Cell Culture Media

Animal component-free, serum-free



Insect cells, esteemed for their proficiency in post-translational modifications, adaptability to a wide array of proteins, remarkable expression yields, facile scalability, and safety for vertebrates, are paramount among recombinant protein expression systems. Our insect cell culture media, meticulously fabricated under cGMP standards, embody serum-free formulations, entirely free from animal-derived components. These media are meticulously formulated to foster the robust proliferation of insect cells like Sf9, Sf21, and H5, while concurrently enabling elevated levels of product expression, thereby epitomizing the pinnacle of support for intensive bioprocessing and research endeavors in this vital sector.

Product Catalog

Product	Catalog No.	Form	Package	Description
IT SFM 03	11009 - 1353	Dry Powder	2 L, 10 L, 50 L, 100 L, Customized	Serum-free medium
	11009 - 23027	Liquid	500 mL, 1000 mL	
TE030	99156 - 1329	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Feed, designed for use in conjunction with IT SFM 03
	99156 - 23015	Liquid	500 mL, 1000 mL	
Insect SFM 1407	11003 - 1407	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum-free medium

Case Study

Sf9 cells

- IT SFM 03 medium can maintain high viability and density of Sf9 cell growth, and the highest cell density in batch culture medium can reach 15.0×10^6 cells/mL.

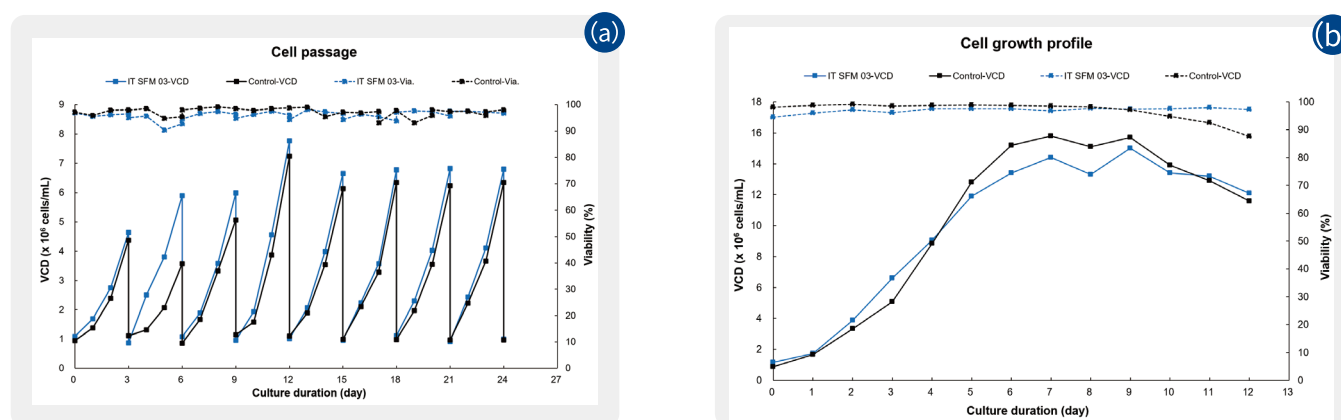


Figure 3. (a) Use IT SFM 03 and control medium to subculture Sf9 cells, with an seeding density of 1.0×10^6 cells/mL, and subculture every 3 days. (b) Batch culture of Sf9 cells using IT SFM 03 and control medium, with an inoculation density of 1.0×10^6 cells/mL.

H5 cells

- IT SFM 03 medium can maintain high viability and density of H5 cell growth, and the highest cell density in batch culture medium can reach 7×10^6 cells/mL.

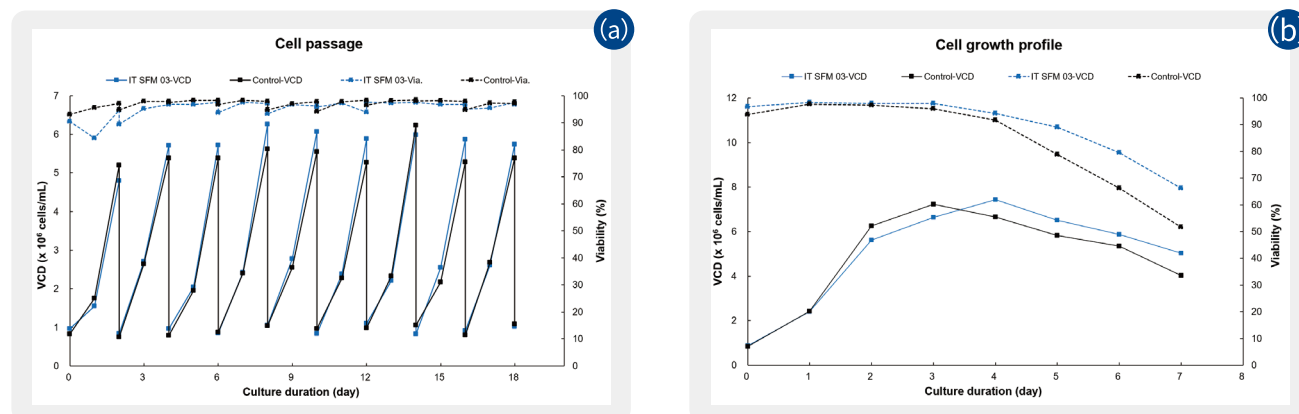


Figure 4. (a) H5 cells were passaged using IT SFM 03 and control medium, with an seeding density of 1.0×10^6 cells/mL and passaged every 2 days. (b) Batch culture of H5 cells using IT SFM 03 and control medium, with an seeding density of 1.0×10^6 cells/mL.

Product expression related cases

- IT SFM 03 can improve the preparation efficiency of seed virus and the yield of target proteins, which has certain advantages compared to the control culture medium.

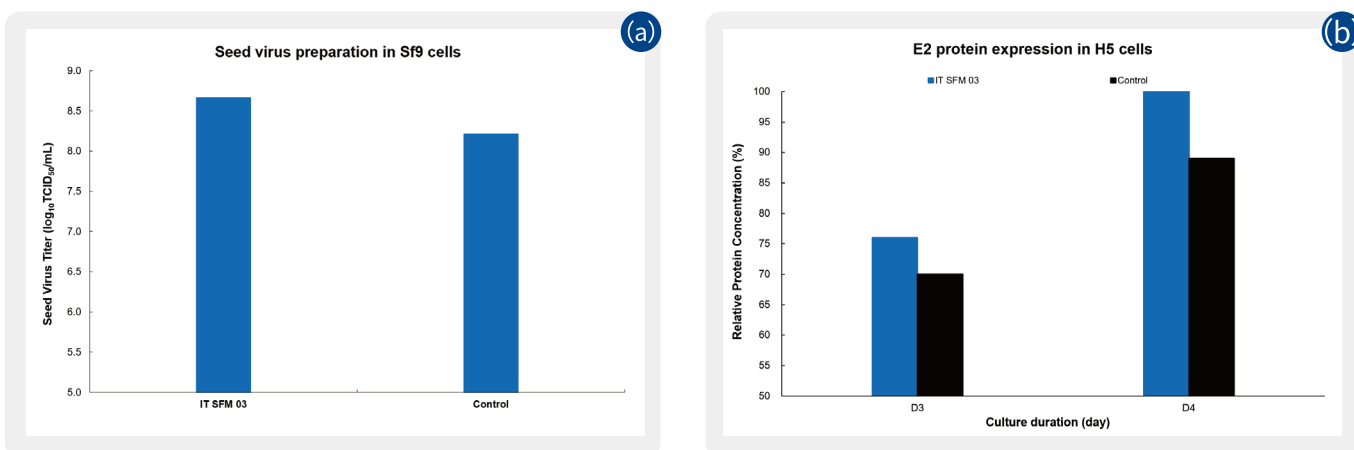


Figure 5. (a) Prepare seed toxins using Sf9 cells in IT SFM 03 and control media, respectively. (b) Prepare swine fever E2 protein using H5 cells in IT SFM 03 and control medium, respectively.

LMH Cell Culture Media

Animal component-free, serum-free

The LMH cell culture medium is highly effective in supporting the growth and proliferation of LMH adherent cells, facilitating efficient intracellular expression of avian adenovirus. This serum-free, protein-free and animal component-free medium, significantly reduces downstream purification costs. It has been widely utilized in various avian adenovirus vaccine production projects.

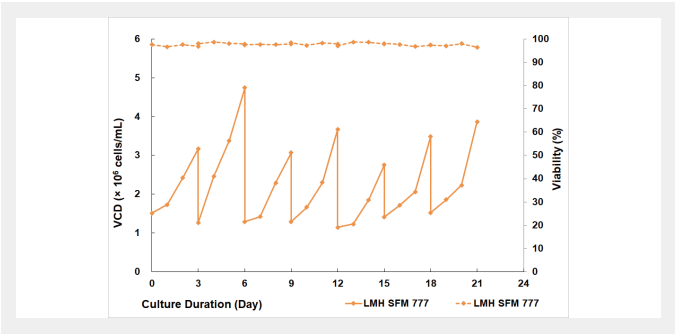
Product Catalog

Product	Catalog No.	Form	Package	Description
LMH SFM 777	11301-777	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum Free Media
LMH SFM 1516	11301-1516	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum Free Media

Cases

Adaptation of Adherent Cells

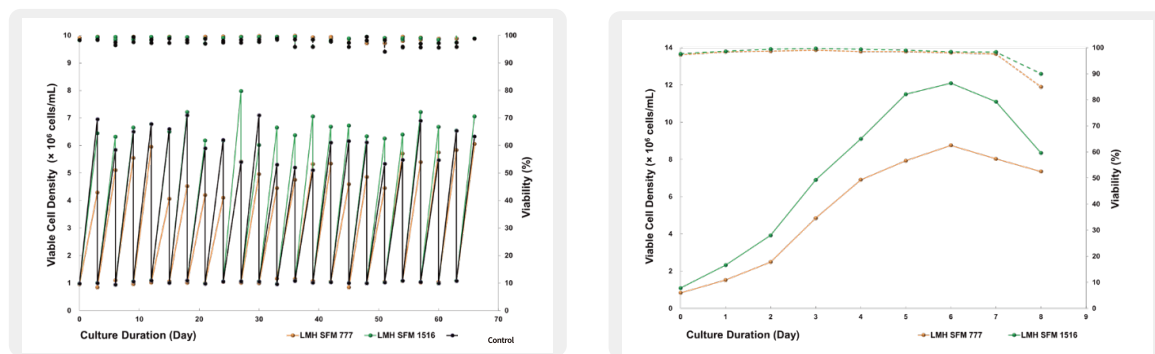
- LMH adherent cells can be successfully adapted to the LMH SFM 777 medium, which is serum-free. These cells exhibit effective proliferation in the first generation and quickly adapt to the suspension culture system.



Suspension adaptation of adherent LMH cells using LMH SFM 777 medium, with daily monitoring of viable cell density and viability.

Growth of LMH Suspension Cells

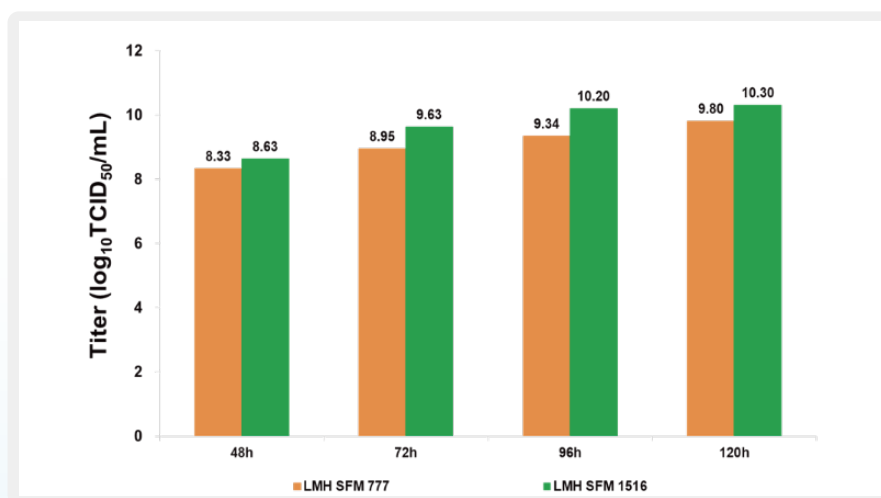
- Stable passaging of LMH suspension cells is achievable in LMH SFM 1516 medium, wherein cell densities reach $6.0-7.0 \times 10^6$ cells/mL within 72 hours, demonstrating a notable advantage in both density and viability over competing media formulations. LMH suspension cells were seeded at a density of 1.0×10^6 cells/mL in the LMH series medium. The peak viable cell density in the LMH SFM 1516 medium reached 12.0×10^6 cells/mL, with a consistently maintained cell viability rate of over 95%. This favorable condition is conducive to subsequent virus infection and expression processes.



(a) Serial passage of successfully adapted suspended LMH cells in LMH SFM 1516 medium, initiated at a density of 1.0×10^6 cells/mL with passages performed every 3 days. (b) Batch culture of LMH suspension cells in LMH SFM 1516 medium, starting at a density of 1.0×10^6 cells/mL.

Virus Production

Following infection of LMH cells with avian adenovirus (serotype 4), the LMH series medium was used for culture, resulting in the highest titer of approximately $10^{10.0}$ TCID₅₀/mL. This titer is significantly higher than that achieved through adherent serum culture (approximately $10^{8.0}$ TCID₅₀/mL), leading to greatly improved viral protein production efficiency.



Production of avian adenovirus (serotype 4) using LMH cells in different culture media, with viral titers sampled and tested at 48, 72, 96, and 120 hours.

MDCK Cell Culture Media

Animal component-free, serum-free



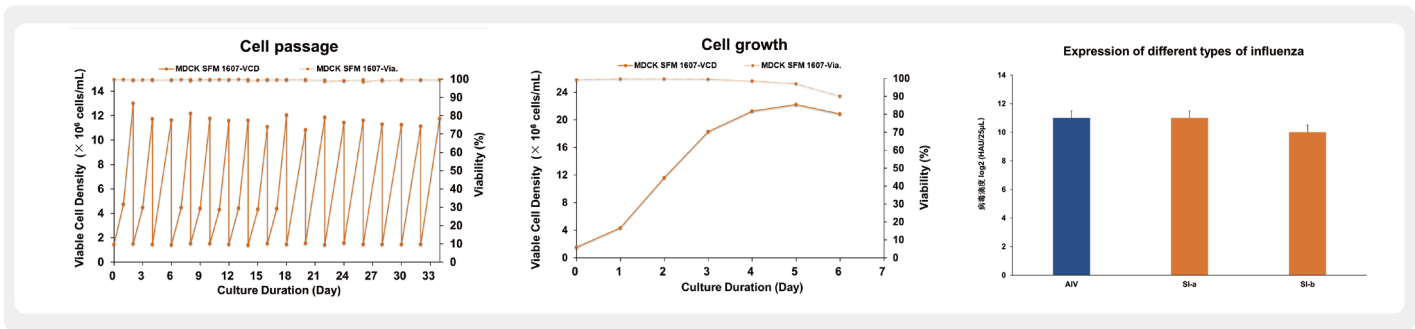
JSBio's media can support the rapid adaptation of MDCK adherent cells to suspension culture, enable MDCK suspension cells to grow at high density in a serum-free environment, and promote the efficient expression of avian influenza virus. This culture medium is a serum-free medium without animal-derived components, which can significantly reduce the downstream purification costs.

Product Catalog

Product	Catalog No.	Form	Package	Description
MDCK SFM 1607	10405-1607	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum Free Media

Cases

- ◆ MDCK SFM 1607 is a serum-free, animal-component-free medium that supports the rapid adaptation of adherent MDCK cells to suspension culture. It enables high-density growth of MDCK suspension cells in a serum-free environment and enhances the efficient expression of various subtypes of influenza viruses (e.g., human, avian, swine, etc.). By eliminating serum and animal-derived components, this medium significantly reduces downstream purification costs in bioprocessing.



The MDCK SFM 1607 medium enables the stable passaging of MDCK cells, with a doubling time of approximately 16 ± 1 hours. In batch culture, the MDCK SFM 1607 medium promotes high-density growth of MDCK cells, achieving a maximum viable cell density of 22.0 × 10⁶ cells/mL.

PK-15 Cell Culture Media

Animal component-free, serum-free

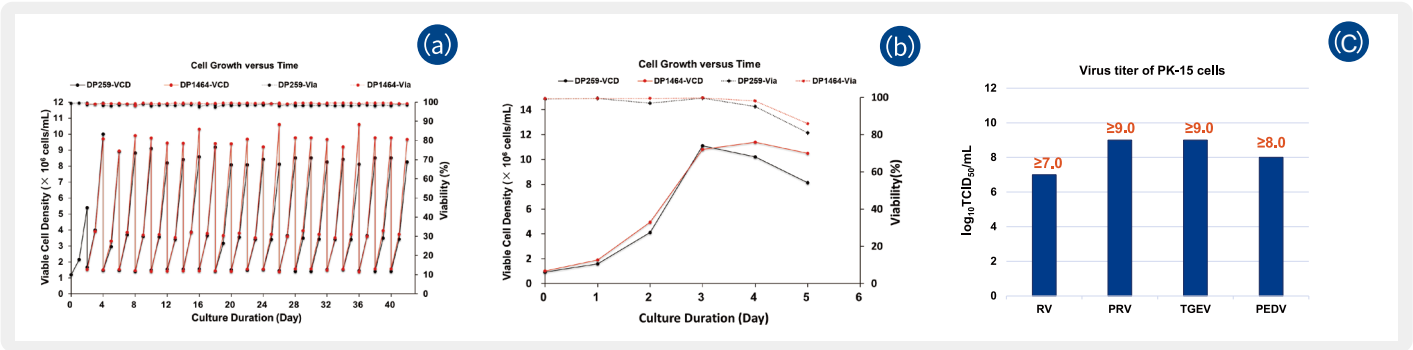


PK15 SFM 1464 medium facilitates rapid adaptation of adherent PK15 cells to suspension culture, enabling serum-free, high-density growth of PK15 suspension cells, and enhancing efficient expression of porcine viruses. This medium is serum-free and animal- component free.

Product Catalog

Product	Catalog No.	Form	Package	Description
PK15 SFM 1464	10702-1464	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum Free Media
CD PK15 259	10701-259	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum Free Media

Cases



(a) Stable passage of PK-15 cells can be achieved in CD PK15 259 and PK15 SFM 1464 media. The doubling time for CD PK15 259 is approximately 18 ± 1 hours, while for PK15 SFM 1464 it is about 17 ± 1 hours.

(b) In batch culture, both media promote high-density growth of PK-15 cells, with a maximum viable cell density reaching 11.0 × 10⁶ cells/mL. The maintenance period of PK15 SFM 1464 medium is longer compared to CD PK15 259 medium.

(c) Both media support the efficient replication of various viruses, including rotavirus, pseudorabies virus, gastroenteritis virus, and diarrhea-causing viruses.

ST Cell Culture Media

Chemical-defined, Animal component-free

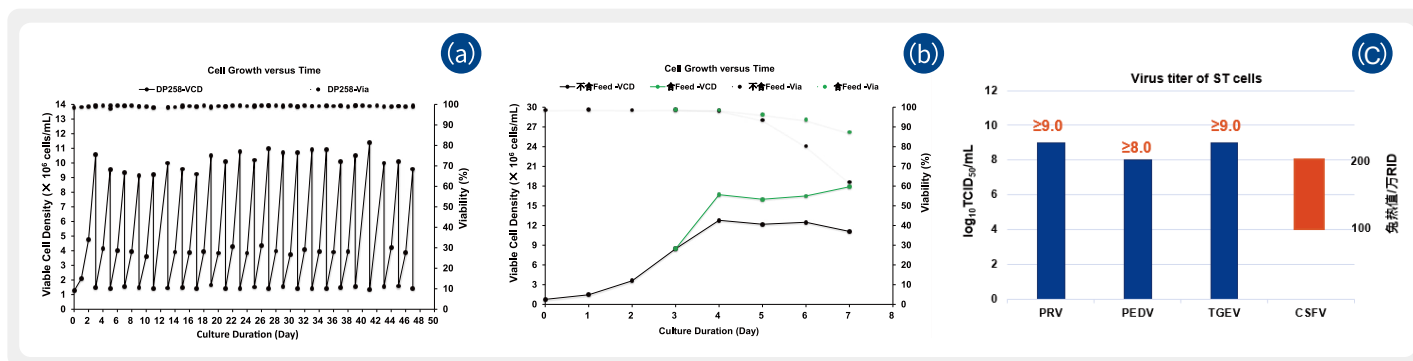


CD ST 258 is a protein-free, chemically defined medium used to support the high density suspension growth of ST cells and the production of vaccines for swine fever virus, porcine parvovirus, porcine pseudorabies virus, porcine transmissible gastroenteritis virus, porcine diarrhea virus, etc.

Product Catalog

Product	Catalog No.	Form	Package	Description
CD ST 258	10604-258	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Chemically Defined Medium

Cases



(a) In the CD ST 258 medium, stable passage of ST cells can be achieved, with a doubling time of approximately 20 ± 1 hours.

(b) In batch culture, CD ST 258 can promote high-density growth of ST cells. Without feeding, the maximum viable cell density can reach 12.5 × 10⁶ cells/mL. With feeding added on Day 3, the maximum viable cell density reaches 16.5 × 10⁶ cells/mL, and the maintenance period is longer.

(c) The CD ST 258 medium can promote efficient replication of viruses such as pseudorabies, diarrhea, gastroenteritis, and swine fever.

F81 Cell Culture Media



F81 LSM 801 is a low serum medium specifically formulated to support the suspension growth of F81 cells, enabling a reduction in serum usage to 3.0% during the cell passage and growth phase. This not only facilitates process scaling but also shortens cell doubling time, thereby reducing production and purification costs. Applied to F81 cell adaptation, passaging, expansion, scale-up, and virus production.

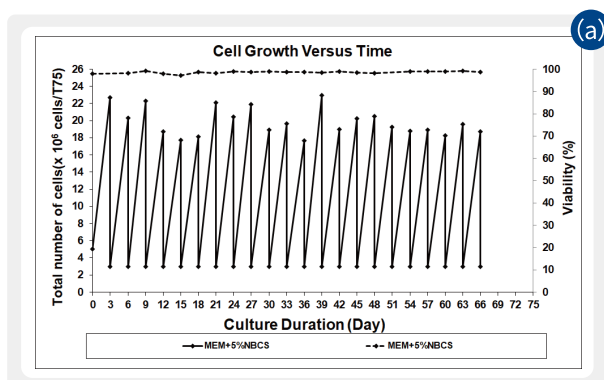
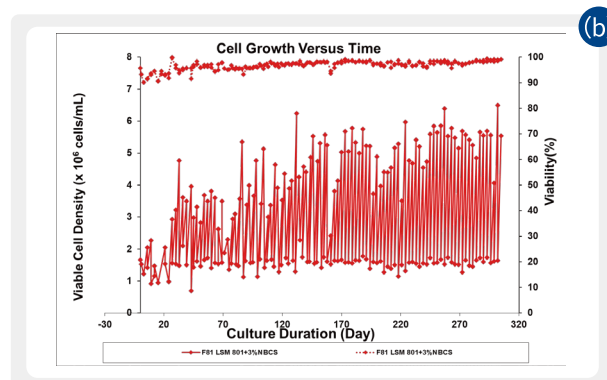
Product Catalog

Product	Catalog No.	Form	Package	Description
F81 LSM 801	11401-801	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Low-serum culture media
ExpVirus A	99166-22039	Liquid	500 mL, 1000 mL	Feed
ExpVirus B	99167-22040	Liquid	500 mL, 1000 mL	Feed

Cases

Adaptation of Adherent Cells to Suspension Culture

- After a long period of acclimation in F81 LSM 801 + 3%NBSC medium, F81 suspension cells with stable passage were obtained.



(a) Serial subculture of adherent F81 cells in MEM medium containing 5% NBSC, with a split ratio of 1:8 to 1:6, performed every three days. (b) Adaptation of adherent F81 cells to suspension culture in F81 LSM 801 medium supplemented with 3% NBSC, initiated at a seeding density of 1.5×10^6 cells/mL, and passaged every three days.

Growth of F81 Suspension Cells

- ◆ The F81 LSM 801 medium facilitates stable passaging of F81 cells with a doubling time of approximately 35 hours. In batch culture, this medium sustains high-density growth of F81 cells, achieving a maximum viable cell density of 14.0×10^6 cells/mL.

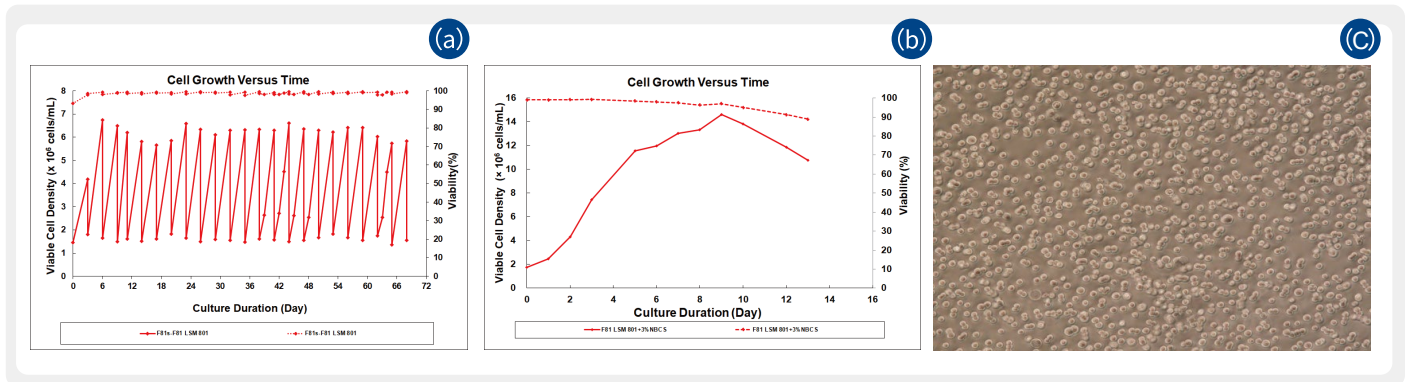
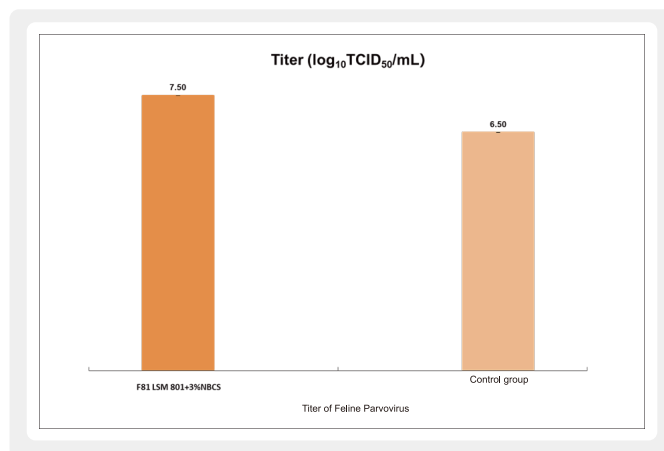


Figure 13. (a) Serial subculture of F81 cells in F81 LSM 801 medium supplemented with 3% NBCS, starting at a density of 1.5×10^6 cells/mL, with passages conducted every three days. (b) Batch culture of F81 cells in F81 LSM 801 medium plus 3% NBCS, initiated at a density of 1.5×10^6 cells/mL. (c) F81 cells observed in a suspended state.

Virus Production

- ◆ Compared to competing products, the F81 cell-based viral production system developed by JSBio yields significantly higher virus titers.



Production of the feline parvovirus was conducted using F81 LSM 801 medium supplemented with 3% NBCS, incorporating ExpVirus A and ExpVirus B feeding strategies, and leveraging self-adapted F81 suspension cells.

Vero Cell Culture Media

Serum-free, Animal component-free



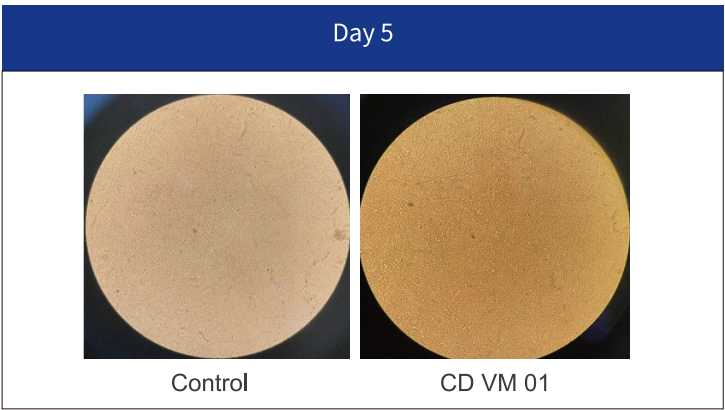
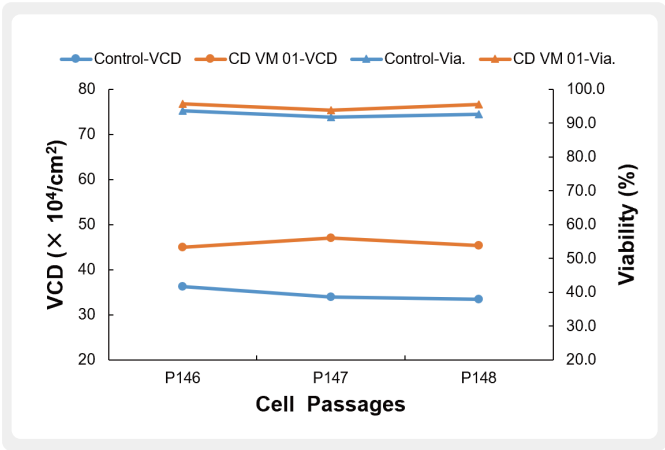
Vero cells originate from normal adult African green monkey kidney tissue. Renowned for their susceptibility to a wide range of viruses and amenability to adaptation on microcarriers, they are extensively employed in the production of viral vaccines. CD VM 01 is a serum-free medium, devoid of any animal-origin components, designed to ensure excellent lot-to-lot consistency. It is specifically formulated to facilitate serum-free attachment culture of Vero cells and to enhance the efficient production of viruses.

Product Catalog

Product	Catalog No.	Form	Package	Description
CD VM 01	11501-1253	Dry powder	2 L, 10 L, 50 L, 100 L, Customized	Serum-Free Medium, Anchorage-Dependent Growth

Cases

- ◆ In comparison to the control, CD VM 01 medium promotes the growth of Vero cells to higher densities while maintaining increased viability.



- (a) Documentation of Vero cell growth in both control and CD VM 01 media as observed under an inverted microscope.
- (b) Serial subculturing of Vero cells in both control and CD VM 01 media.

**Together,
We Culture Growth**

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