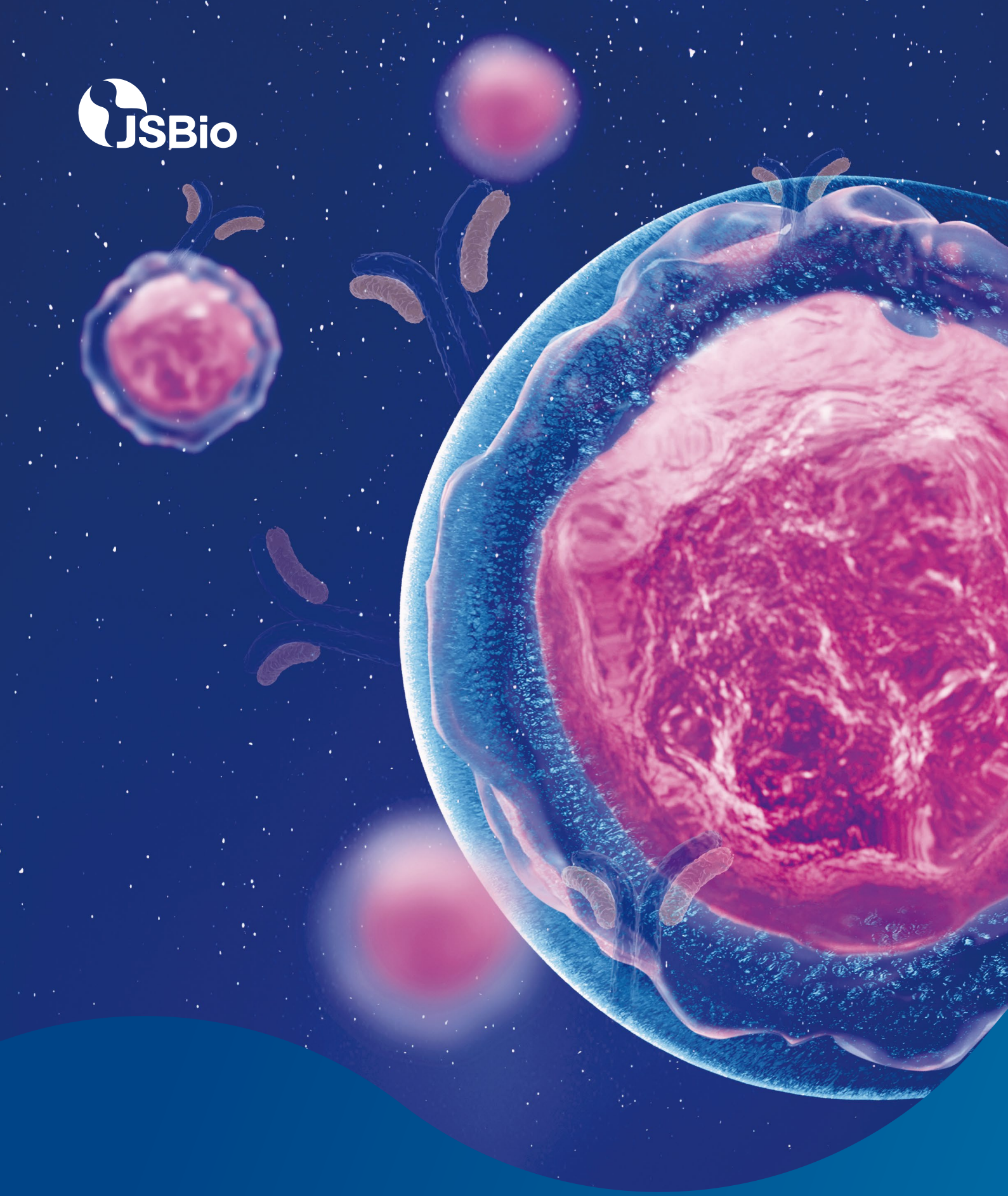


JSBio Product Guide —Recombinant Protein

JS Biosciences Co., Ltd. (JSBio) is a leading high-tech enterprise specializing in cell culture technology, product research and development, production, and sales. Our premium cell culture media are extensively utilized in various sectors including biopharmaceuticals, biological reagents, human vaccines, and veterinary vaccines. With three state-of-the-art manufacturing facilities located in Lanzhou, Nantong, and Busan, South Korea, all compliant with cGMP standards, we boast a collective annual production capacity of thousands of tons.

Adhering to the highest international standards within the cell culture medium industry, we have obtained prestigious quality system certifications such as ISO13485 and ISO9001, and have successfully completed the registration of Class 1 medical devices. Our rigorous raw material management practices encompass a meticulous screening process for both materials and suppliers, ensuring that the stringent quality requirements for end product production are consistently met. For instance, the culture media utilized in the production of human biological products adhere to the standards set forth by the Chinese Pharmacopoeia, the US Pharmacopoeia, and the European Pharmacopoeia.

Strengths

- TSE/BSE declaration can be provided
- Production meets cGMP standards
- Consistently excellent batch-to-batch quality
- Flexible packaging selection
- Significant increase in product yield
- Three major international manufacture sites ensure fast and stable supply
- Customizable components of catalog culture media

This guide from JSBio is designed to assist in selecting culture media for the production of recombinant proteins, including monoclonal antibodies. The range of media includes CHO cell culture options for fed-batch and perfusion cultures, transient transfection, hybridoma cell culture, HEK-293 cell culture, and insect cell culture. These products have been extensively used by customers and their exceptional performance has been validated, supporting the robust growth and viability of host cells, thereby enhancing the expression of recombinant proteins significantly.

Packaging specifications

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

Form	Package material	Package size
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

CHO Culture Media for Fed-batch and Perfusion Culture

Chemically Defined, Animal Component Free

Chinese hamster ovary (CHO) cells offer numerous advantages, including low transmission of human viruses, production of similar post-translational modifications to human cells, the ability to achieve large-scale serum-free culture, and low expression of endogenous proteins in supernatant. They are extensively utilized in the biopharmaceutical field, particularly in the manufacturing of monoclonal antibodies. We offer a variety of CHO cell culture media combinations tailored to meet the specific requirements of various cell clones for commonly used fed-batch and perfusion culture processes. All the CHO cell culture media we provide are manufactured under cGMP conditions and are chemically defined without animal-derived components, facilitating high-density growth of CHO cells and the high expression of recombinant proteins.

Product Catalog

Fed-batch Culture

Product	Catalog No.	Form	Package Size	Description
CD CHO 031	88031-585	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium, suitable for CHO-S, DG44, CHO-K1, CHOZN and other cells
	88031-20090	Liquid	500 mL、1000 mL	
CD CHO 041	88041-1330	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium, suitable for CHO cells domesticated in Dynamis medium
	88041-23011	Liquid	500 mL、1000 mL	
CD CHO 045	88045-1509	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium, suitable for CHOZN, CHO-K1Q and other cells
	88045-23053	Liquid	500 mL、1000 mL	
ALLY CHO 100a New	99169-1512	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed, used with ALLY CHO 100b and base media
ALLY CHO 100b New	99169-1473	Liquid	2 L、10 L、50 L、100 L、Customized	Feed, used with ALLY CHO 100a and base media
CD Feed 020	99171-1510	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed, used with CD Feed 017 and base media
CD Feed 018	99155-1333	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed, used with CD Feed 017 and base media
CD Feed 017	99035-1250	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed, used with CD Feed 020/018 and base media
CD Feed 021	99173-1531	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed, significantly improve the purity of bispecific antibodies

Perfusion Culture

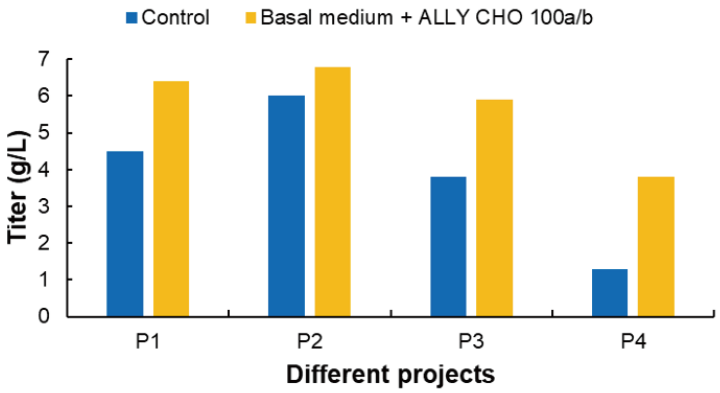
Product	Catalog No.	Form	Package Size	Description
APEX CHO 100	88100-1497	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium/feed

Cases

1、ALLY CHO 100a/b related cases

- PEX CHO 100a/b demonstrates a notable enhancement in protein production, particularly for challenging-to-express molecules, **with a maximum increase of 1.9 times (P4).**

Figure 1. It illustrates the preparation of monoclonal antibodies and Fc fusion proteins in various projects using JSBio's commercial base medium with APEX CHO 100a/b and a control medium, respectively. A comparison of protein titers on the day of harvest was conducted.



2、CD CHO 041, CD Feed 018/017, CD Feed 020/017 related cases

- CD CHO 041 combined with feeds CD Feed 020/017 or CD Feed 020/017 can increase antibody production and have comparable product quality to the control.

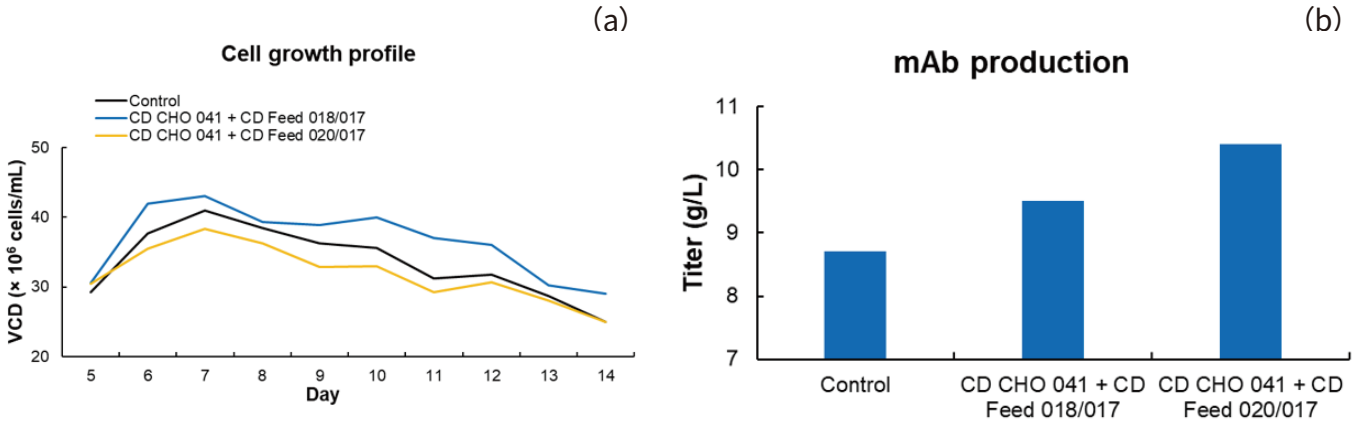


Figure 2. Prepare monoclonal antibodies using different culture media. (a) The growth curve of cells. (b) The production titer of each group on the day of harvest.

Table 1. Quality analysis results of products in different experimental groups

Group	SEC MP (%))	CE-NR MP (%)	CEX		
			AV (%)	MP (%)	BV (%)
Control	98.71	98.46	14.73	69.49	15.78
CD CHO 041 + CD Feed 018/017	98.62	98.6	12.54	62.02	25.44
CD CHO 041 + CD Feed 020/017	98.79	98.58	14.21	67.13	18.66

3、Perfusion culture process related cases

- APEX CHO 100 perfusion culture medium is capable of sustaining high cell density and viability over an extended period, leading to elevated antibody production at approximately 2.5 g/L/day. Additionally, this culture medium aids in reducing product accumulation in the reactor and enhances process operability.

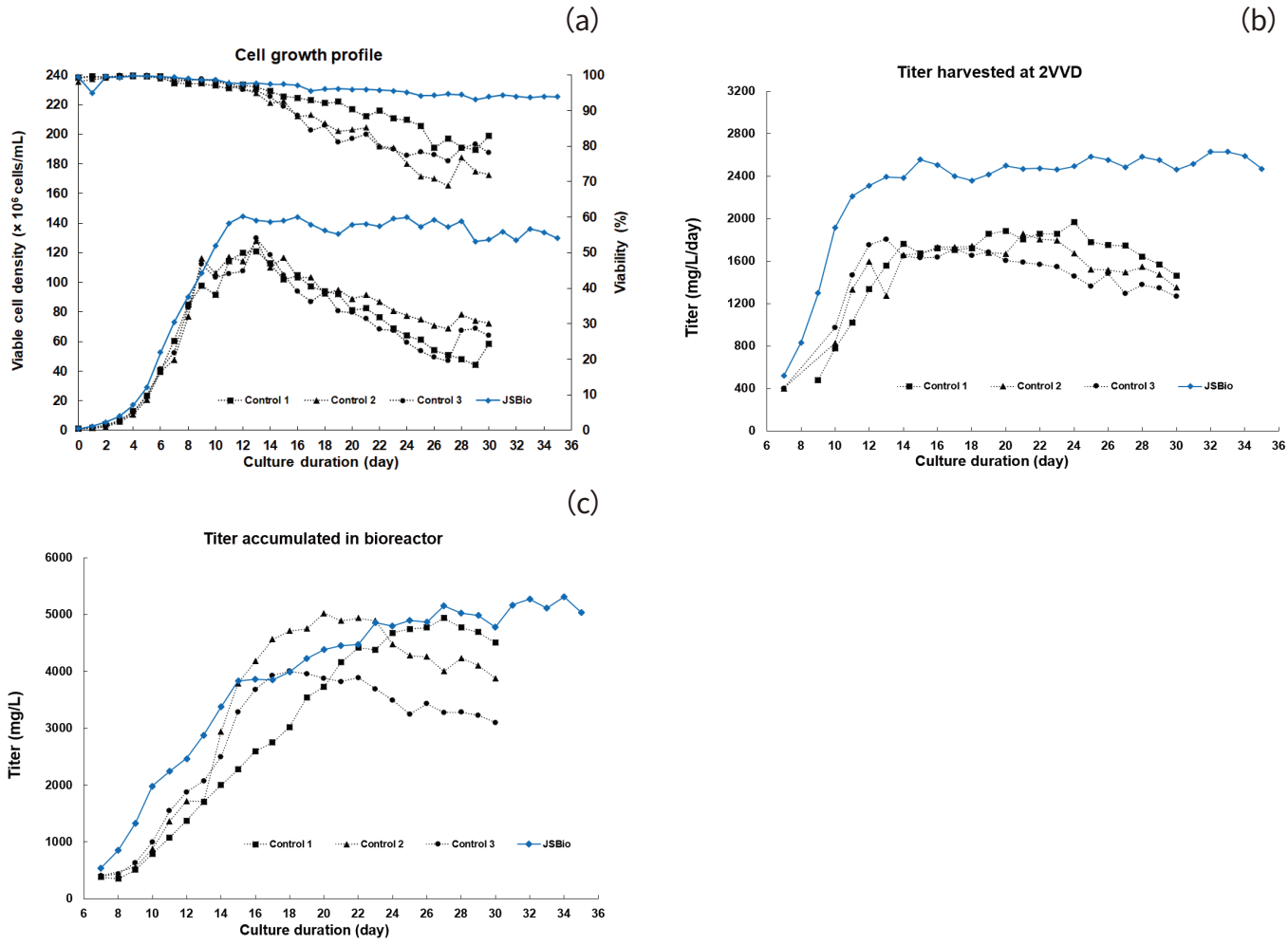


Figure 3. Preparation of monoclonal antibodies using different culture media through perfusion process，VVD=2. (a) The growth curve of cells. (b) The daily production of antibodies harvested outside the reactor. (c) Accumulated antibody production in the reactor.

CHO Culture Media for Transient Protein Expression

Chemically Defined, Animal Component Free

CHO cells are commonly utilized as host cells in the biopharmaceutical industry for producing recombinant proteins like antibodies, cytokines, and enzymes. The transient transfection method with CHO cells not only enables rapid sample generation for early-stage research but also aids in assessing the expression potential of target proteins within CHO cells. All CHO cell transient culture media provided are chemically defined and free from animal-derived components, facilitating high levels of product expression.

Product Catalog

Product	Catalog No.	Form	Package Size	Description
Trans CHO	88044-1430	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium，suitable for CHO-K1 and CHO-S cells, Suitable for electroporation and chemical transfection
	88044-23034	Liquid	500 mL、1000 mL	
Enhance Trans S1	99158-1431	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed, used with Trans CHO and Enhance Trans S2
	99158-23035	Liquid	500 mL、1000 mL	
Enhance Trans S2	99160-1432	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed, used with Trans CHO and Enhance Trans S1
	99160-23036	Liquid	250 mL、500 mL、1000 mL	
ALLY Feed 100 New	99182-1597	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed，used with Trans CHO, suitable for all CHO cells
	99182-24005	Liquid	500 mL、1000 mL	

Cases

◆Trans CHO + Enhance Trans S1/S2 can significantly increase the transient expression level of CHO cell, with an expression level of 40-600 mg/L depending on molecular and experimental conditions.

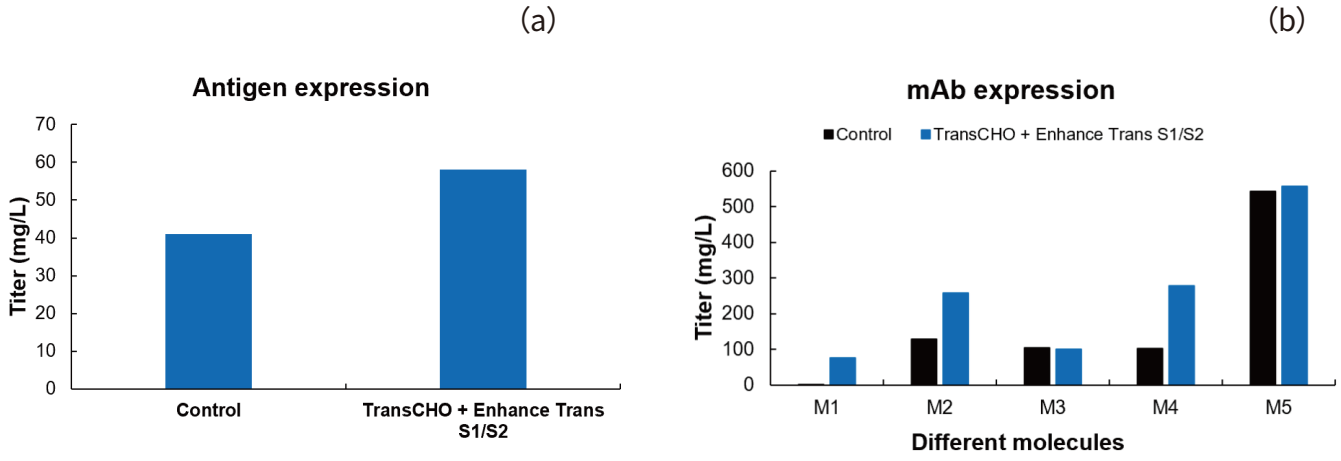


Figure 4. Recombinant proteins were prepared by transient transfection of CHO cells using Trans CHO + Enhance Trans S1/S2 and control medium, respectively. (a) Antigen; (b) Antibody.

Hybridoma Cell Culture Media

Chemically Defined, Animal Component Free

Hybridoma technology is a widely employed and effective approach for acquiring monoclonal antibody sequences. Our chemically defined hybridoma cell culture medium is free from animal-derived components and facilitates high product expression.

Product Catalog

Product	Catalog No.	Form	Package Sizes	Description
HY01	22318-1429	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium, used with supplementary CD 293 FA/FB to achieve higher titer
CD SP 01	12101-1532	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium, used with supplementary CD 293 FA/FB to achieve higher titer
	12101-23063	Liquid	500 mL、1000 mL	

Cases

- The CD SP 01 medium can support high expression of hybridoma cells, with a yield of up to 2.5 g/L.

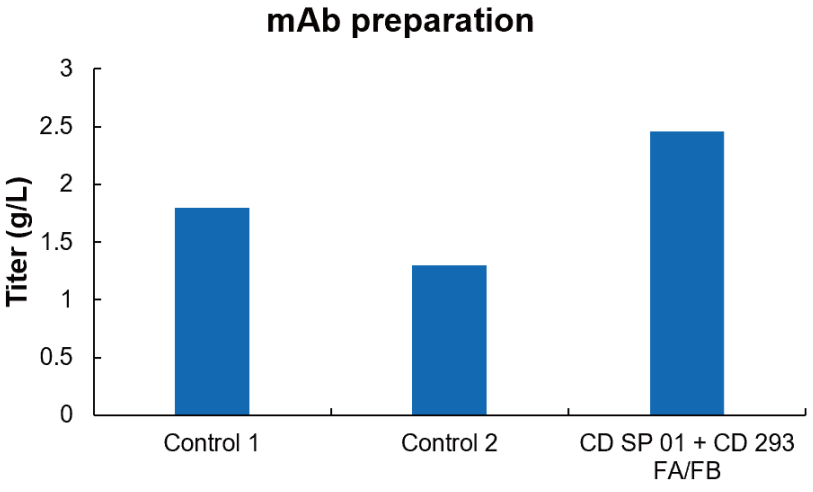


Figure 5. Hybridoma cells were cultured using a fed-batch culture process to produce monoclonal antibodies, with a culture time of 15 days. The expression level was detected.

HEK-293 Cell Culture Media

Chemically Defined, Animal Component Free

HEK-293 cells, commonly used for recombinant protein production, are human embryonic kidney cells. The CD 293 series of media, manufactured under cGMP conditions, are chemically defined culture mediums devoid of animal-derived components. These media support high-density growth and efficient transfection expression of various HEK-293 cells, including the production of viral vectors like adeno-associated viruses, lentiviruses, and adenoviruses. For more information on related products, please visit our official website at www.jianshunbio.com.

Product Catalog

Product	Catalog No.	Form	Package Size	Description
CD 293 01	11203-1238	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium
	11203-22052	Liquid	500 mL、1000 mL	
CD 293 02	11204-1239	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium
	11204-22053	Liquid	500 mL、1000 mL	
CD 293 FA	99151-1524	Dry powder	2 L、10 L、50 L、100 L、Customized	The Feed, typically used in conjunction with CD 293 FB to improve stable protein expression.
	99151-23060	Liquid	500 mL、1000 mL	
CD 293 FC	99151-1327	Dry powder	2 L、10 L、50 L、100 L、Customized	The Feed, typically used in conjunction with CD 293 FB to improve transient protein expression.
	99151-23016	Liquid	500 mL、1000 mL	
CD 293 FB	99035-1242	Dry powder	2 L、10 L、50 L、100 L、Customized	The Feed, typically utilized in conjunction with CD 293 FA or FC, at a dosage of 1/10th the amount of CD 293 FA and FC.
	99035-23004	Liquid	250 mL、500 mL、1000 mL	
ALLY Feed 100 New	99182-1597	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed，used with base medium
	99182-24005	Liquid	500 mL、1000 mL	

Cases

1. HEK-293 cell growth related cases

- CD 293 01 and 02 media can achieve stable growth of HEK-293 cells, with a doubling time of about 21-24 hours and a cell viability rate above 90%. In batch culture, the highest cell density can reach 13.5×10^6 cells/mL.

(a) (b)

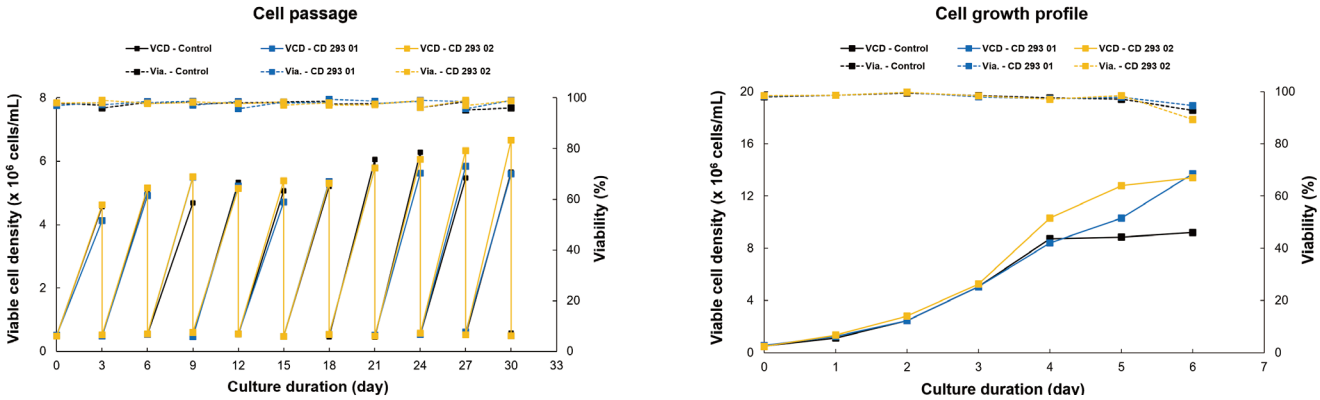


Figure 6. (a) Subculture HEK-293 cells using different culture media, with a seeding density of 0.5 × 10^6 cells/mL, and subculture every 3 days; (b) Batch culture of HEK-293 cells using different media with a seeding density of 0.5 × 10^6 cells/mL.

2、Protein expression related cases

- CD 293 01 and 02 media can significantly increase the transient protein expression of HEK-293 cells, **with expression levels ranging from 50-400 mg/L depending on molecular and experimental conditions.**

(a) (b)

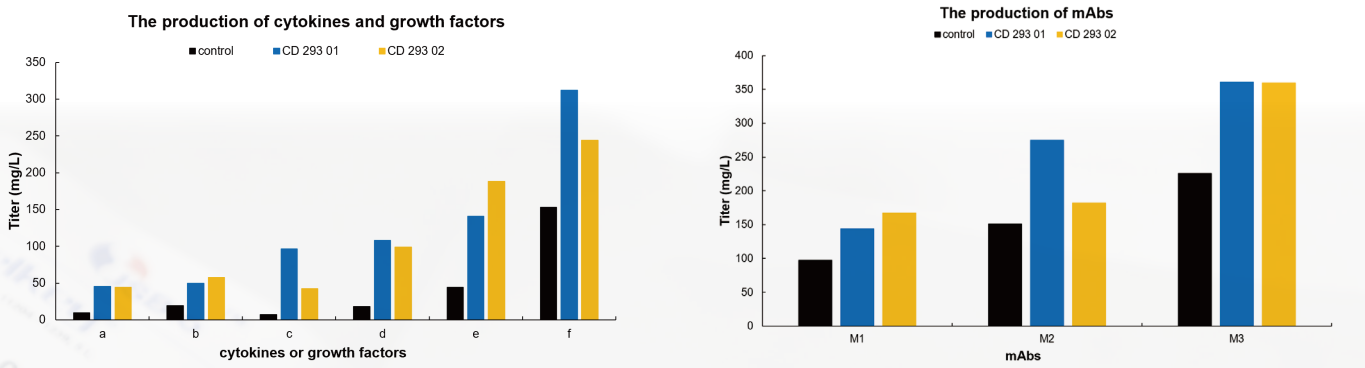


Figure 7. Multiple protein molecules were transiently expressed in HEK-293 cells using different culture media. (a) Cytokines and Growth Factors. (b) Monoclonal antibodies.

Insect Cell Culture Media

Serum Free, Animal Component Free

Insect cells are a prominent system for expressing recombinant proteins due to their post-translational modification capabilities, adaptability to diverse protein types, high expression levels, ease of amplification, and safety for vertebrates. Our insect cell culture medium, produced under cGMP conditions, is a serum-free medium without any animal-derived components. This medium supports high-density growth of insect cells such as Sf9, Sf21, H5, and facilitates high product expression.

Product Catalog

Product	Catalog No.	Form	Package Size	Description
IT SFM 03	11009 - 1353	Dry powder	2 L、10 L、50 L、100 L、Customized	Base medium
	11009 - 23027	Liquid	500 mL、1000 mL	
TE030	99156 - 1329	Dry powder	2 L、10 L、50 L、100 L、Customized	Feed，used with IT SFM 03
	99156 - 23015	Liquid	500 mL、1000 mL	

Cases

1、Cell growth related cases

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.

(a) (b)

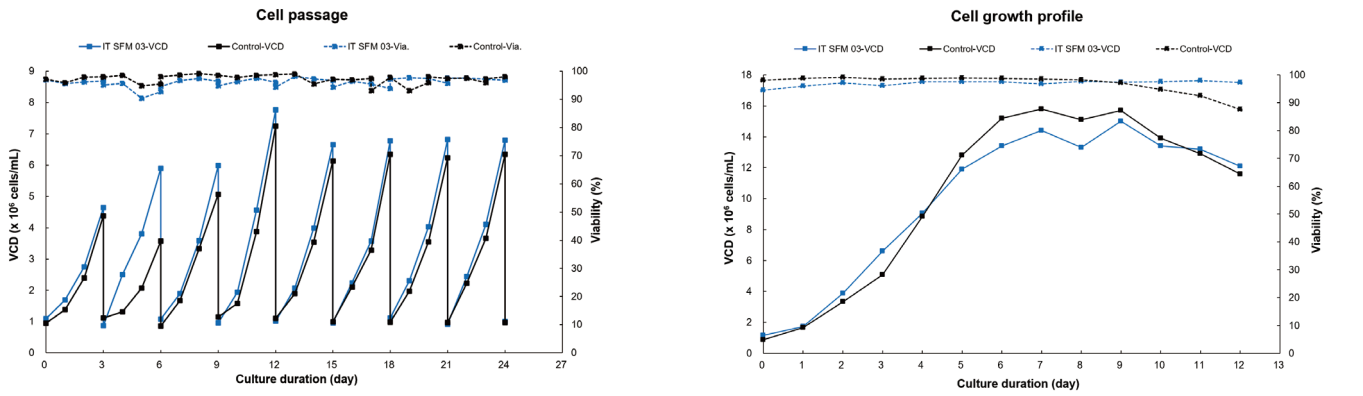


Figure 8. (a) Use IT SFM 03 and control medium to subculture Sf9 cells, with an seeding density of 1 × 10^6 cells/mL, and subculture every 3 days. (b) Batch culture of Sf9 cells using IT SFM 03 and control medium, with an inoculation density of 1 × 10^6 cells/mL.

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.

(a) (b)

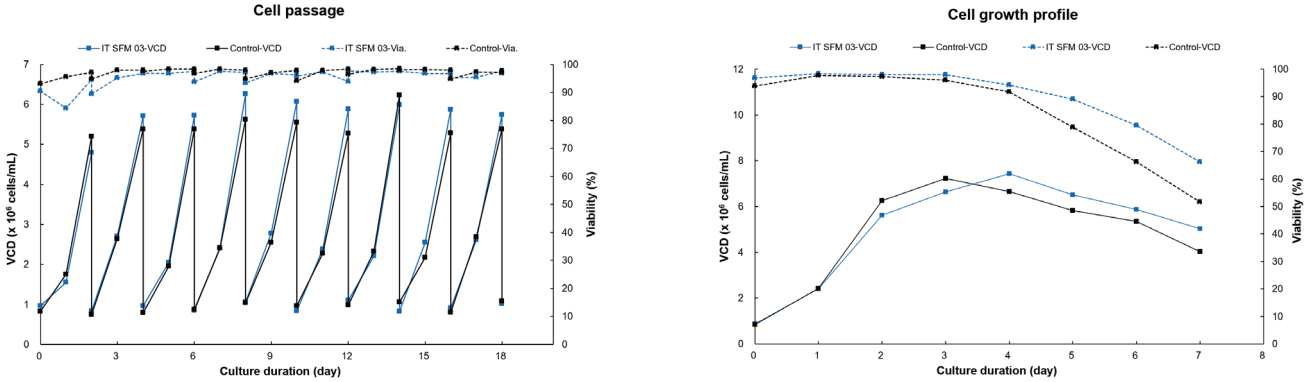


Figure 9.（a）H5 cells were passaged using IT SFM 03 and control medium, with an seeding density of 1 × 10^6 cells/mL and passaged every 2 days.（b）Batch culture of H5 cells using IT SFM 03 and control medium, with an seeding density of 1 × 10^6 cells/mL.

2、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.

(a) (b)

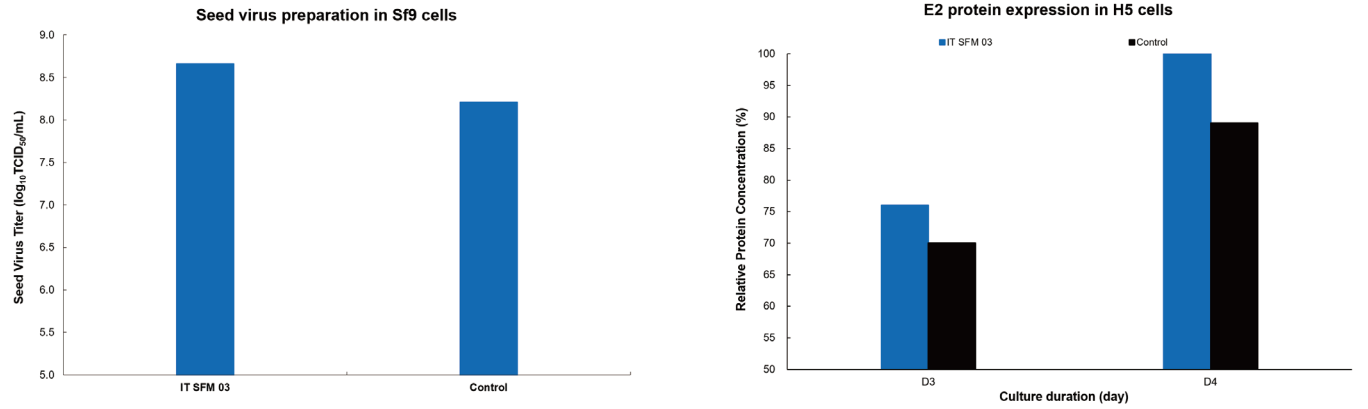


Figure 10.（a）Prepare seed toxins using Sf9 cells in IT SFM 03 and control media, respectively.（b）Prepare swine fever E2 protein using H5 cells in IT SFM 03 and control medium, respectively.

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