MAM-PF®
CHO PRODUCTION MEDIA

ACF (Animal Component Free)
Chemically defined
High cell densities
Pharmaceutical application
High product yield

BioConcept

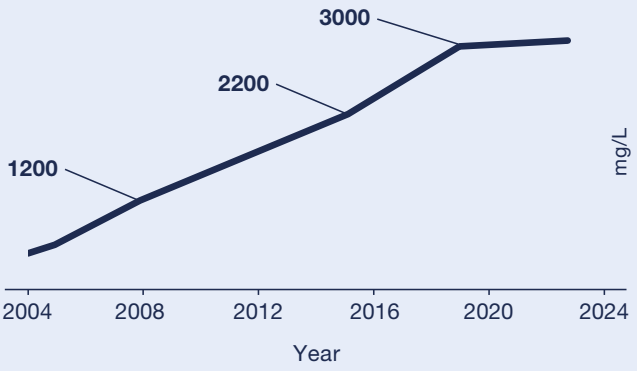
MAM-PF®

Use the Benefits of CHO Production Media

Mammalian Artificial Cell Culture Media – Protein and Animal Component Free (ACF) for CHO, BHK, and other mammalian cells in accordance with the strict quality guidelines EMA/410/01.

MAM-PF® series

MAM-PF® is a production media. It is protein-free and protein hydrolysates free, chemically defined and for high cell density cultivation of a variety of cell lines such as CHO (Chinese Hamster Ovary) cells or BHK (Baby Hamster Kidney) cells and the high level expression of recombinant proteins. BioConcept holds a certificate for every single component used in the MAM-PF® media series to guarantee an untainted and exceptional final product.



Development of MAM-PF®
Increase of Erythropoietin (EPO) yields during the system development. Within the last 4 years the product yield could be quadrupled up to 2.3 g/L using the MAM-PF77® medium and FMS3 in a fed-batch.

Animal Component Free
MAM-PF® media do not contain proteins or undefined hydrolysates.

Chemically defined
BioConcept holds TSE certificates for each component to ensure EMA/410/01 conformity.

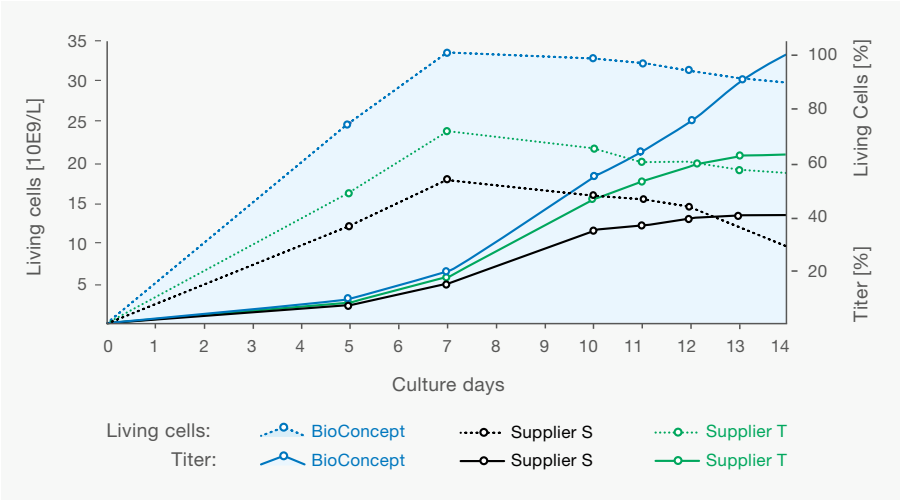
Easy adaptation
In many cases it is possible to switch directly from your current medium to MAM-PF®.

High cell density combined with high product yield
- Antibody production of up to 5.5 g/L.
- EPO of up to 2.5 g/L (see graph).
- Cell density up to 3.7 x 10^7 cells/ml.

Fast Growth
High Density

Cell density

CHOSI cells cultured in our media have shown fast growth and a much higher cell density compared to other media. This results in final product titers at the end of the fed-batch cycle. The higher viability in the stationary phase shows that the glycosylation is superior.



MAM-PF® and other Suppliers
Performance of MAM-PF77® and two different CHO media suppliers in a 14-day fed-batch mAb production.

Variable batch capacity

liter/day

5 up to 5000

liquid

Water for injection (WFI) is the highest quality available.

kg/production run

2 up to 800

powder

Particle sizes around 20 µm (d50) for a quick dissolution of the powder medium.

Feed mixes

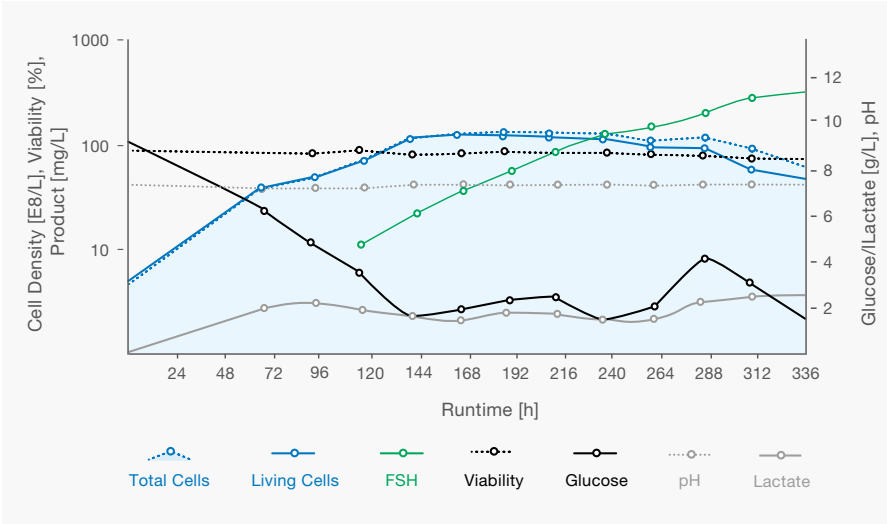
Various feed mixes are available for high density cell culture and high productivity.

Glycosylation

Best glycosylation pattern observed.

FSH

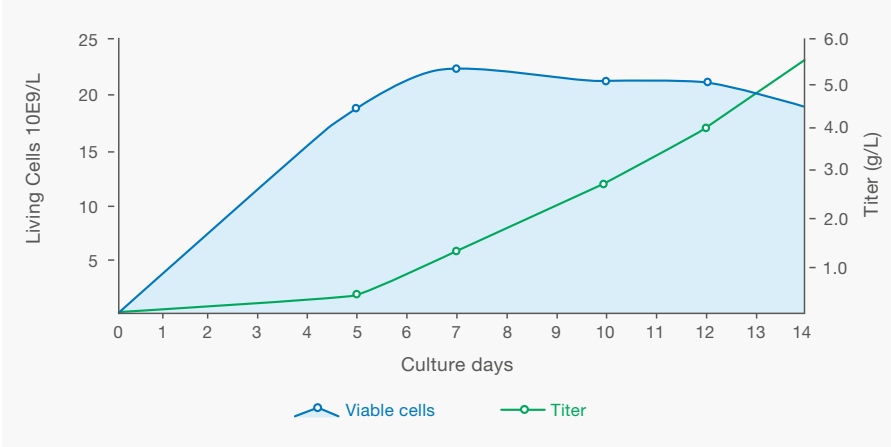
A cell density of over 100 mio. cells per liter can be reached through mixing the CHO feed mix FMS3 to MAM-PF77®. It is possible to achieve a titer of over 350 mg/L of the highly glycosylated follicle-stimulating hormone (FSH) within 14 days in a stirring bioreactor tank, making it a very high quality product. As determined during the purification process, 45% of the product showed an isoform pattern, low aggregates, and low oxidized forms. MAM-PF77® can be used to produce quality FSH that fulfills its Ph. Eur. requirements.



FSH produced with MAM-PF® and FMS3
14-day bioreactor production scheme of the high glycosylated follicle-stimulating hormone (FSH) using MAM-PF77® and the FMS3 feed mix.

Ipilimumab — Antibody

The continuous innovation and development of the MAM-PF® media series has lead to the brand new MAM-PF77® cell culture medium and CHO Feed Mixes FMS3 and FMU. MAM-PF® media now increase productivity of Ipilimumab (monoclonal antibody) by up to 5g/L. The new expression system is also viable in fed-batch and perfusion systems.



Ipilimumab produced with MAM-PF® and FSU
High yields of mAbs, e.g. > 5g/L Iplimumab can be reached in a 14-day fed-batch system using MAM- PF77® plus the novel CHO feed mix FMU.

Biosimilars

Selection of pre-developed biosimilars produced with MAM-PF® media series.

Molecule	Reference Product	Main Indication	Availability		
			Cell Line	USP	DSP
Recombinant Proteins					
Epoetin alpha (EPO)	Epogen, Eprex	Anemia	•	•	•
Darbepoetin apha (DPO)	Aranesp	Anemia	•	•	•
Interferon beta-1a (INFb)	Avonex, Rebif	Multiple Sclerosis	•	•	•
Follicle Stimulating Hormone (FSH)	Gonal-F, Puregon	Infertility	•	•	•
Human Choriogonadotropin (hCG)	Ovidrel	Infertility	•	•	•
Human Luteinizing Hormone (hLH)	Luveris	Infertility	•	•	•
Urokinase (uPA)	Abbokinase	Thrombolysis	•	•	
Alteplase (tPA)	Actilyse, Activase	Thrombolysis	•	•	
Tenecteplase (TNK-tPA)	Metalyse	Thrombolysis	•	•	•
Factor VIIa (FVIIa)	Novoseven	Hemophilia	•	•	
Factor VIII (FVIIII)	Recombinate	Hemophilia	•		
beta-Glucocerebrosidase (GCasebeta)	Cerezyme	Morbus Gaucher	•		
Dornase alpha (DNAse I)	Pulmozyme	Cystic Fibrosis	•	•	
Thrombin (FIIa)	–	Hemostasis	•		
Antibodies					
Adalimumab (TNFa)	Humira	Arthritis, Psoriasis	•	•	•
Rituximab (CD20)	Rituxan	Lymphoma, Arthritis	•	•	•
Trastuzumab (HER2)	Herceptin	Breast & Gastric Cancer	•	•	•
Bevacizumab (VEGF)	Avastin	Lung & Colorectal Cancer	•	•	•
Cetuximab (EGF-Receptor)	Erbitux	Colorectal & Head Cancer	•	•	•
Omalizumab (IgE)	Xolair	Persistent Allergic Asthma	•	•	
Denosumab (RANKL)	Prolia	Osteoporosis	•	•	•
Tocilizumab (IL6-Receptor)	Actemra	COVID-19, Arthritis	•	•	•
Ipilimumab (CTLA-4)	Yervoy	Lung & Renal Cancer	•	•	•
Panitumumab (EGF-Receptor)	Vectibix	Colorectal Cancer	•	•	•
Pertuzumab (HER2)	Perjeta	Breast Cancer	•	•	
Eculizumab (Complement comp. 5)	Soliris	Hemoglobinuria	•	•	
Natalizumab (Integrin a)	Tysabri	Multiple Sclerosis	•	•	
Infliximab (TNFa)	Remicade	Arthritis, Psoriasis	•		
Pembrolizumab (PD1-Receptor)	Keytruda	Lung & Renal Cancer	•	•	
Nivolumab (PD1-Receptor)	Opdivo	Melanoma, Lung Cancer	•	•	
Atezolizumab (PD-L1)	Tecentriq	Urothelial & Breast Cancer	•		
Daratumumab (CD38)	Darzalex	Multiple Myeloma	•		
Guselkumab (IL-23)	Tremfya	Psoriasis	•		
Fusion Proteins					
Etanercept (TNFa/beta)	Enbrel	Chronical Arthritis	•	•	•
Abatacept (CD80, CD86)	Orencia	Rheumatoid Arthritis	•	•	
Belatacept (CD80, CD86)	Nulojix	Kidney Transplantation	•		
Dulaglutid (GLP-1-Receptor)	Trulicity	Diabetes mellitus Type II	•	•	•

References

MAM-PF Media Series

BioConcept is a leading manufacturer and service partner for numerous top-tier pharmaceuticals and academic institutions in Switzerland and around the world.

BioConcept has been operating under a certified quality management system since 1995. Our production site for liquid and powder media production is located in the Life Science area Basel (Switzerland).

BioConcept

Paradiesrain 14
4123 Allschwil
Switzerland
Tel. +41 (0)61 486 80 80
Fax +41 (0)61 486 80 00
info@bioconcept.ch
www.bioconcept.ch