

CDM-HD:

Chemically Defined Medium for High-Density Cell Culture

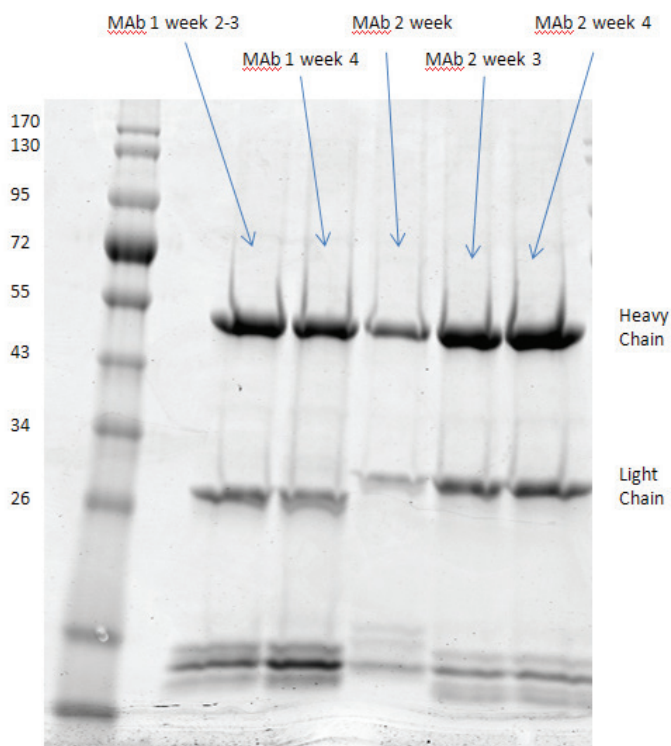
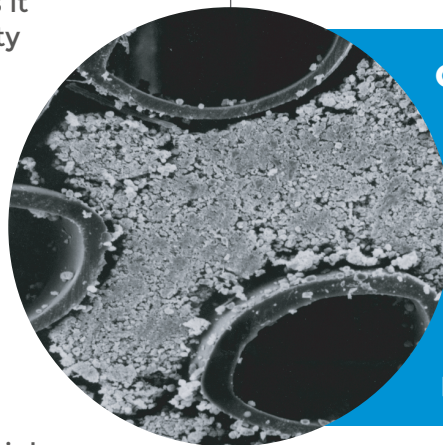
- Use instead of serum
- Chemically defined
- Protein-free
- Simplifies purification



CDM-HD Serum Replacement is a chemically defined, protein-free serum replacement that permits any basal medium such as DMEM or RPMI to be used without serum. CDM-HD is designed specifically for the culture of cells at high density and optimized for use in FiberCell Systems hollow fiber bioreactors.

When produced using CDM-HD secreted products such as monoclonal antibodies and recombinant proteins

are free of contaminating proteins from the medium and can be purified using simplified protocols, increasing net yield in many cases. CDM-HD provides lot-to-lot consistency and is an economical replacement for serum. It is a dry powder that makes up one liter and is used at a concentration of 10%. The cost of CDM-HD is less than serum giving you all the benefits of a chemically defined, protein-free medium without the high price. CDM-HD is more than a serum replacement, it is a direct manifestation of the fundamentally different cell culture environment found in hollow fiber bioreactors as it does not support cells at low density in spinners and flasks. The concept of CDM-HD is simple: provide a universal serum substitute that can take advantage of the simplified serum requirements for cells grown in hollow fiber bioreactor systems. CDM-HD represents a true breakthrough in cell culture ideology and technology. It is the first time that a culture medium takes advantage of the specific growth of cells at a high density in order to simplify and optimize that medium's composition.



Unpurified hybridoma supernatants produced using CDM-HD. The monoclonal antibody is the main protein fraction.

Optimized For Hollow Fiber Bioreactors

- Composition balanced for high-density cell culture.
- No surfactants or other cell membrane stabilizing agents.
- Increased buffering capacity maintains optimum conditions for protein and antibody production.

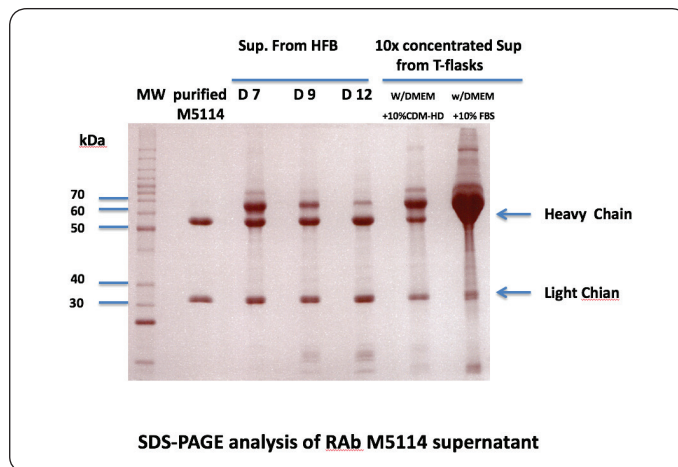
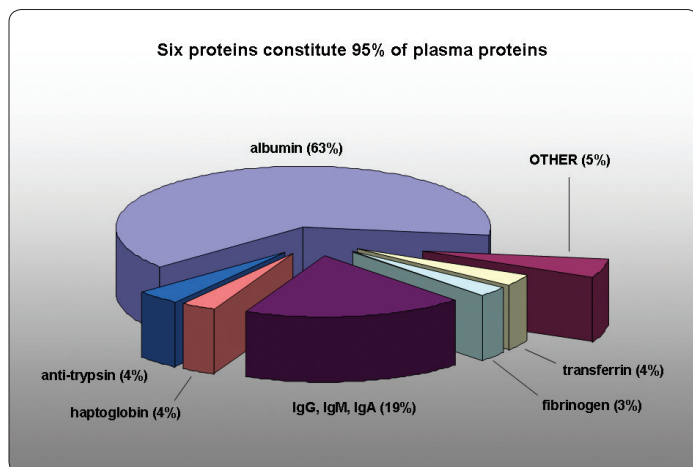
Cross-section of hollow fibers in FiberCell Systems hollow fiber bioreactor. High-density cell growth is shown in extra-capillary space.

CDM-HD: Chemically Defined Medium for High-Density Cell Culture

| SERUM | CDM-HD |
|---------------------------------------|---|
| High degree of lot-to-lot variability | No variability |
| High protein content | Protein-free, chemically defined, ADCF |
| Purification can be difficult | No extraneous protein or lipid to complicate purification |
| Price fluctuates | Price stability, economical |
| Adventitious virus contaminants | No viral contamination |
| Regulatory unfriendly | cGMP compliant |

BELOW LEFT: Various components of serum. The major component, BSA binds many substances non-specifically and can be an overwhelming protein burden in some purification schemes, immunoglobulins can interfere with specific antibody purifications and the "other" can have many undefined effects. None of these characteristics will be reproducible from lot-to-lot.

BELOW RIGHT: Comparison of unpurified hybridoma supernatants produced in a hollow fiber bioreactor using DMEM/10% FBS and DMEM/10% CDM-HD in a C2011 FiberCell Systems hollow fiber bioreactor.



INSTRUCTIONS FOR USE: Reconstitute the contents of one bottle of CDM-HD in distilled water to make a total volume of 1 liter. Adjust pH to no higher than 6.5 using 1N NaOH. Sterile filter, do not autoclave. Add to any basal medium at a concentration of 10%. When using with FiberCell Systems hollow fiber bioreactors add 10% FBS to the cell inoculum when loading cells to provide attachment factors. No adaptation is required though you may see a reduction in glucose uptake rate for the first day or two of use. CDM-HD is stable for at least 6 weeks as a concentrate when stored at 2-8 °C and away from light. Please see complete usage instructions at fibercellsystems.com

NOTES:

- CDM-HD will not require adaptation but is optimized for cells growing at high density, 5×10^7 /mL or higher. For best results switch to CDM-HD when the glucose uptake rate has reached one gram per day, typically after one week of culture.
- CDM-HD contains 700 mg per liter of glucose and HEPES buffer to provide a 10 mm concentration when added at 10% to basal mediums. Low glucose mediums such as RPMI should be avoided if possible.
- CDM-HD is protein free and does not contain any cell attachment factors. When inoculating cells in medium containing CDM-HD add 10% FBS to the cell inoculum only. This will provide the required attachment factors for adherent cells. This is not required for suspension cells though hybridoma cell lines should be treated as adherent cells.
- CDM-HD is protein free. The secreted protein of interest may be the only significant protein present in your cell culture supernatant. You should re-evaluate your purification protocols as entire steps can sometimes be eliminated, increasing yield. Keep in mind that CDM-HD is protein free and contains no ferritin so the free iron levels will be higher than in standard mediums. Pay attention to any chelating agents or phosphate that may be part of your buffers or purification protocol.

PRODUCT ORDERING CATALOG ID: CDM-HD-1, Powder to make 1 Liter. For technical support contact FiberCell Systems.



www.fibercellsystems.com

To order call 301-471-1269 or 435-512-8658

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