



We are committed to saving lives

HEMOXCell[®]

NATURALLY BOOST CELL GROWTH



INTRODUCTION

Hemarina, a spinoff of CNRS*, was founded in 2007, with its core research framework based on the discovery of a new oxygen carrier.

Hemarina has discovered that our planet's seas contain solutions to the development of safe and effective biomaterial of non-mammalian origin. Our continuous research and development efforts have opened the door to the production of biomaterial sourced from a specific marine invertebrate. Hemarina offers products that constitute a decisive technological breakthrough.

Hemarina has filed more than 20 patents for this technology. After all, oxygen is essential to life. Cells need an optimal oxygen level for healthy metabolism and Hemarina find the way to do so. The **HEMOXCell®** technology is a marine-biomaterial able to deliver oxygen to cells and can be used in a large field of applications where oxygen is required.

*CNRS is the French National Center for Scientific Research

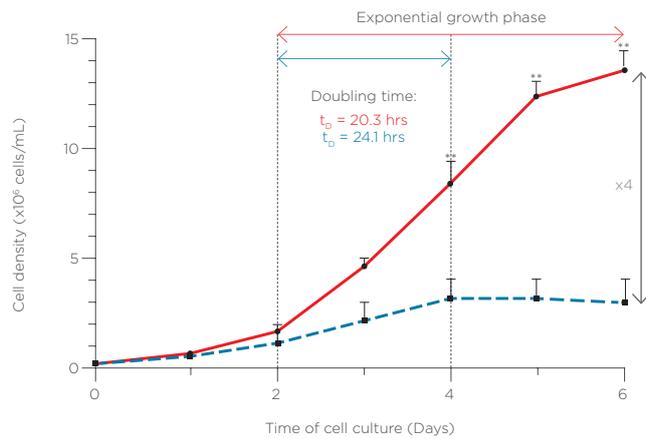


HOW DOES IT WORK?

HEMOXCell®, a patented technology, is a marine macro nano particle able to carry 156 molecules of oxygen. **HEMOXCell®** is a ready-to-use solution. The **HEMOXCell®** catches the oxygen and releases it according to the P_{O2} gradient (the demand of oxygen). The link with oxygen, or formation of **HEMOXCell®**, is a cooperative, allosteric process where the molecule-oxygen link is affected by the saturation of oxygen. **HEMOXCell®** also has anti-oxidative properties (SOD activity) which help to maintain cell culture media quality.



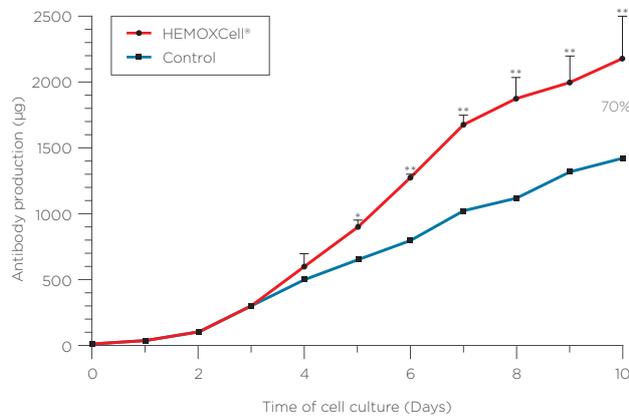
PERFORMANCE TESTS



CELL DENSITY

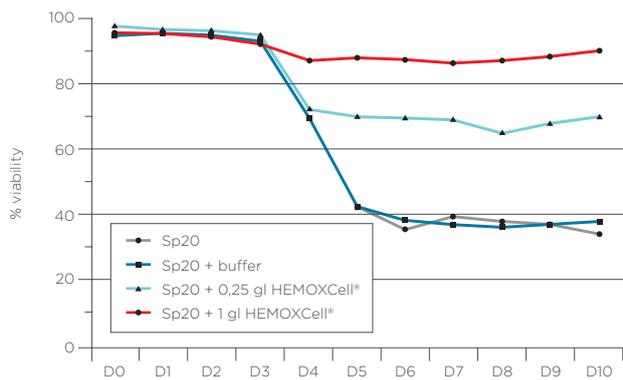
Cell Proliferation x4

CHO-S cells cultivated CD-CHO media serum free completed **HEMOXCell®**. Set up a dose-response range to determine the optimal concentration for your cell line.



ANTIBODY PRODUCTION

Compared to control, with **HEMOXCell®** productivity increases by approximately 70%.



VIABILITY

HEMOXCell® has also been tested on cell lines other than CHO. The viability results shown were obtained testing a SP2/O cell line.

▲ THE ADVANTAGES OF *HEMOXCell*[®]

Compare to traditional cell growth activators, *HEMOXCell*[®] offers significant advantages:

- ▲ *HEMOXCell*[®] increases yields without requiring any changes in cell culture conditions.
- ▲ *HEMOXCell*[®] is a ready-to-use solution.
- ▲ *HEMOXCell*[®] provides ideal conditions for cell culture with suitable oxygenation and without damage generated by over-oxygenation or metabolic wastes.
- ▲ *HEMOXCell*[®] as an anti-oxidant does no damage to the quality of the culture media.
- ▲ *HEMOXCell*[®] has been tested with several cellular lines (CHO-320, CHO-S, MSC, Sp2/O, and NS0), yielding excellent results.
- ▲ *HEMOXCell*[®] is stable and functional between +4°C and +37°C.
- ▲ *HEMOXCell*[®] acts at low concentration (0.025 mg/ml).
- ▲ *HEMOXCell*[®] is mammalian-free.

▲ BENEFITS OF *HEMOXCell*[®]

For any work in cell culture, even for cell lines difficult to grow, *HEMOXCell*[®] allows you:

- ▲ **Better cellular growth rate**
- ▲ **Higher antibody productivity**
- ▲ **Higher recombinant protein productivity**
- ▲ **Fewer dead cells**

▲ CONCENTRATION TO USE *HEMOXCell*[®]

The optimum concentration defined with CHO-320, for example, is: 0.025 mg/ml.

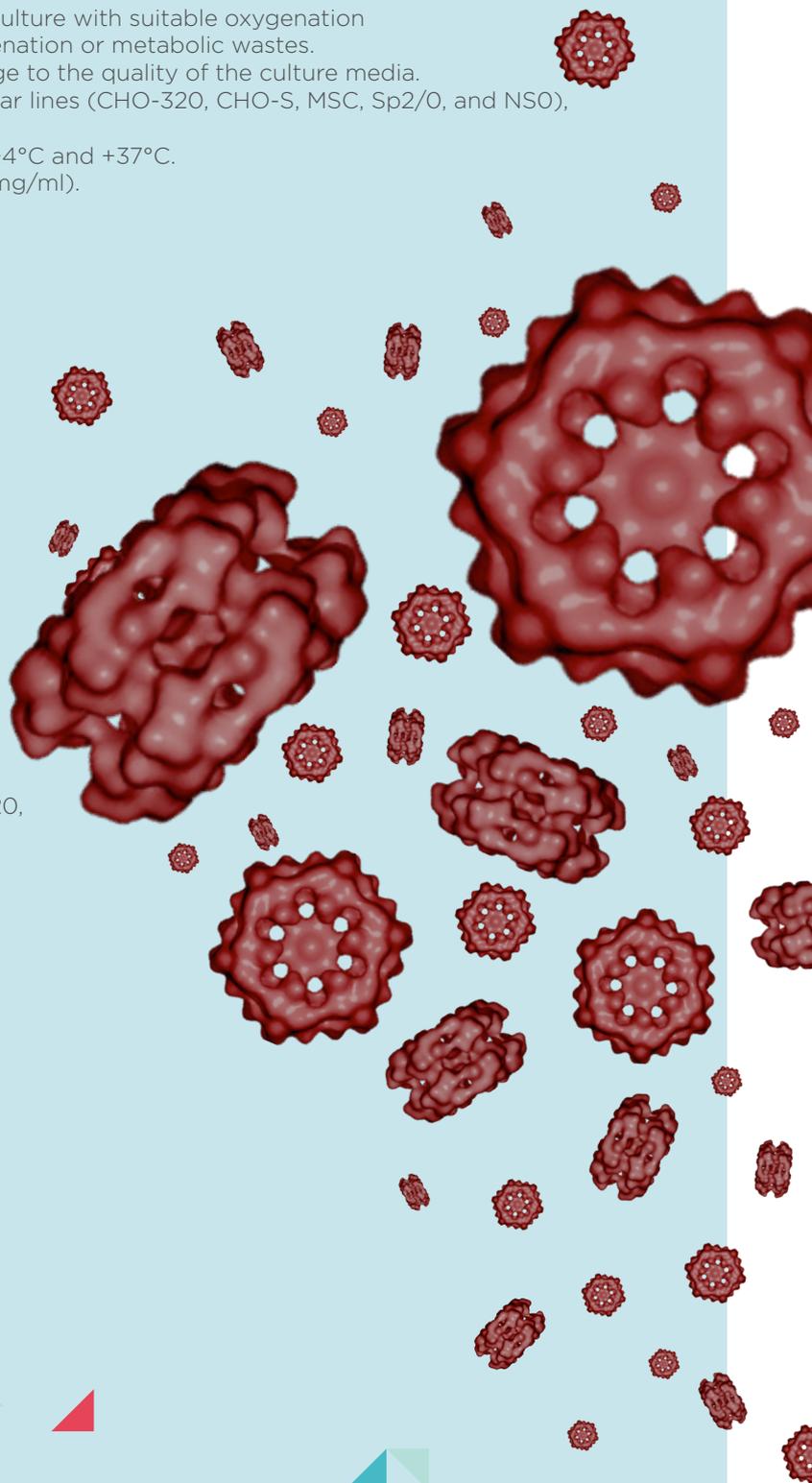
One sample of *HEMOXCell*[®] 1 (see table below) can be tested in 2 L of media at 0.025 mg/ml

▲ CULTURE CONDITION

Microplate: 50 milligrams of *HEMOXCell*[®] are sufficient to perform 2 x 96-Well plate cultures.

Flask: 262.5 mg of *HEMOXCell*[®] are sufficient to perform in four 500 ml flasks with three different concentrations (0.025, 0.05, and 0.1)

Bioreactor: 2.5 g of *HEMOXCell*[®] are sufficient to prepare 100 L media at 0.025 mg/ml



▲ FEATURES

COMPOSITION

Natural extracellular biomaterial
Buffer: Trizma base (Sigma aldrich)

CHARACTERISTICS

Biological product whose origin is a marine invertebrate and is therefore animal free
HEMOXCell® is an macromolecule of 3.6 MDa

REFERENCE NUMBER

	HEMOXCell® 1	HEMOXCell® 2	HEMOXCell® 3	HEMOXCell® 4	HEMOXCell® 5	HEMOXCell® 6
Quantity of HEMOXCell®	50 mg	250 mg	500 mg	1 g	2,5 g	5 g
Quantity of HEMOXCell® buffer	4 ml	20 ml	40 ml	80 ml	200 ml	400 ml

SPECIFICATIONS

Range: Mostly used concentration around 25 mg/L

pH: 7.1 ± 0.2

Osmolarity: 303 mOsm/kg ± 10

MICROBIOLOGICAL CHARACTERISTICS

- ▲ Aseptic manufacturing process
- ▲ Microbial contamination free
- ▲ Sterility guaranteed

STORAGE & SHIPMENT CONDITIONS

Storage at < -80°C
Delivery in pool box at -30°C

LIFETIME

1 year at -80°C

For more information, please contact us at hemoxcell@hemarina.com

All data and statements concerning these products may be considered as being indicative of representative properties and characteristics obtainable. We make no warranty, express or implied, concerning actual use or results because of industry-specific influences



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