

# CELLtainer technology supports high cell densities using serum-free suspension CHO cells

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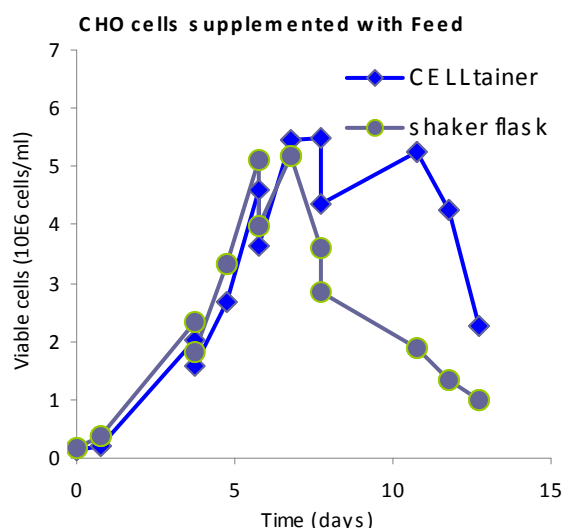
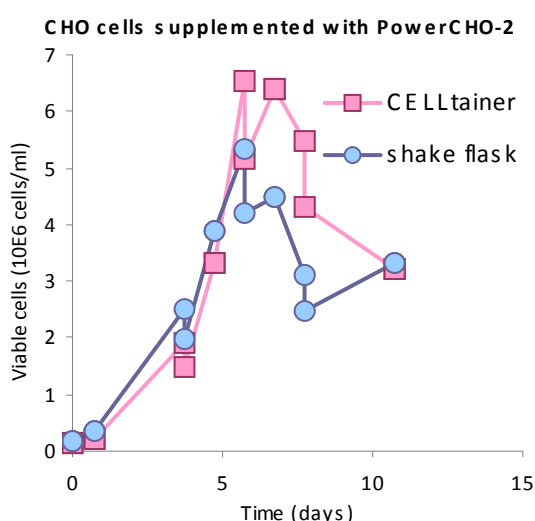
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The primary aim of the present study was to show that the CELLtainer technology is able to support high cell densities Chinese Hamster Ovary cells using serum-free suspension without the necessity of pH or DO control. The secondary aim was to evaluate the PowerCHO-2 medium and a feed-strategy in the CELLtainer using CHO cells.

**Materials and Methods:** Prior to the start of the CELLtainer a pre-culture of CHO-S cells in shake flasks have been generated. Cells were inoculated at cell density of  $0.1 \times 10^6$  cells/ml in 5 L PowerCHO-2 medium (Lonza cat no. BE12-771Q) supplemented with 8 mM L-glutamine. At day 4 of the culture CHO cells were supplemented by either 1.4 L of PowerCHO-2 medium or 1.4 L of Feed for PowerCHO-2 (Lonza cat no. BERD007). Two days later this supplement was provided again using 1.7 L of PowerCHO-2 or Feed for PowerCHO-2, respectively. For direct comparison the cells were also grown under identical conditions in shake flasks. Feed for PowerCHO-2 was used under conditions as shown in the right graph and an additional feed of 2.2 L was provided at day 8 of the culture. Experiments were terminated when viability in the CELLtainers was < 70%.

## Results:

Cell growth was very comparable in both shakers and CELLtainers during the first 4 days of the culture with population-doubling times of 20-24 hours. When the CHO cells were supplemented with PowerCHO-2 (left graph) viability and cell density were higher in the CELLtainer compared to the identical shaker and remained at > 80 % viable until day 8 of the culture. At day 11 this culture was terminated due to low viability. When cells were supplemented with Feed for PowerCHO-2 (right graph), population-doubling time increased to 30-35 hour, however cells remained much longer viable at high cell densities. Viability in the CELLtainer under these conditions still was >85% at day 13, this in contrast to the corresponding shaker flask in which viability was < 80% from day 11 onward.



## Conclusion:

In the absence of any control of pH or Dissolved Oxygen, the CELLtainers supported higher cell densities combined with a longer duration of high viability compared to the shaker conditions. It can be concluded that the Feed for PowerCHO-2 increased the longevity of the culture.

It can be concluded that the CELLtainer technology supports high cell density and is superior to the conditions in shaker flasks.