

CellVessel STR (#23-0250): – Functionality test using CHO cells

Purpose:

CHO cells grown as suspension culture in small CellVessel stirred tank reactor (STR)

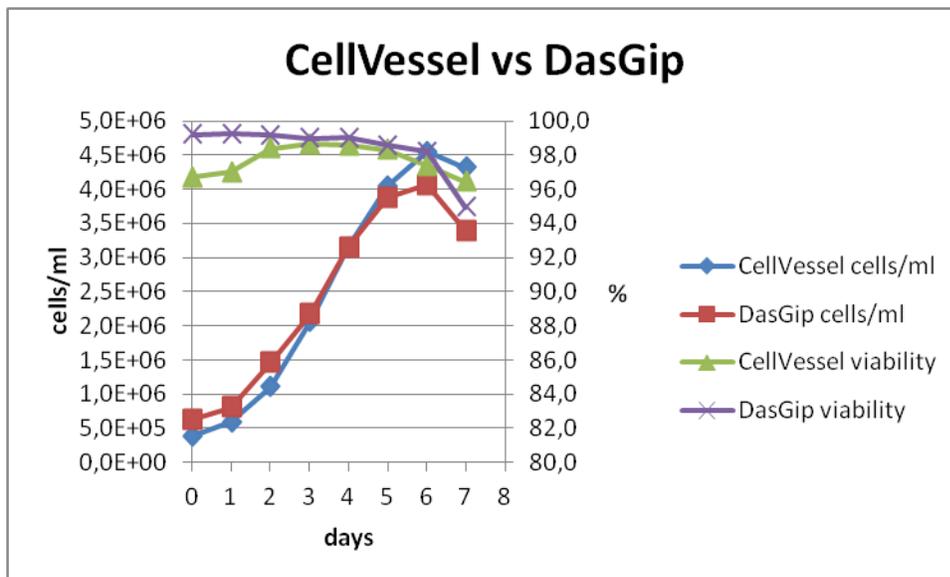
- Do cells survive, multiply and, produce antibodies?
- How does CellVessel STR compare to DasGip STR?

Cells:

- CHO producing an antibody
- Fully adapted to a specific CD-medium
- Fully adapted to suspension culture

Results:

Shortly, the CellVessel STR is fully functional (cells survive, multiply, and produce antibodies) and it performs almost exactly as the DasGip STR (for this specific cell line). Antibody produced amounts to 77 μ g/ml for the CellVessel STR as compared to 76 μ g/ml for the DasGip STR. This specific cell line has produced from 60-80 μ g/ml (several setups using DasGip STRs) lending reliability to this result. Furthermore, the figure below clearly demonstrates, that cell viability during exponential growth are the same for the two reactors (well above 98%) and that the maximal cell densities achieved are more or less the same for the two reactors as well. If anything, cell density achieved for the CellVessel STR (4,6E+06 cells/ml) are somewhat higher than for the DasGip counterpart (4,1E+06 cells/ml).



Experimental design:

- Suspension cultures of identical cells grown in either CellVessel STR (100ml medium) or DasGip STR (600ml medium) – one reactor each
- Batch-mode for both reactors (i.e. no perfusion and no sugar shots)
- Same CD-medium used for both cultures
- Same seeding density for both reactors: Approx. 5E+05cells/ml
- Both reactors are sparged from below
- The two reactors are equipped with identical sensors (oxygen, pH, and temp.)
- Both bioreactors are guided by the same DasGip controllers
- Controller settings identical for both reactors:
 - Oxygen tension: 30% of ambient air
 - pH 7,0
 - 37°C
- Controller settings not identical for the two reactors:
 - Stirring: 80rpm for the DasGip STR versus 60rpm for the CellVessel STR
 - Aeration: 3L/hr for the DasGip STR versus 1L/hr for the CellVessel STR