

CellVessel STR (#21-2000) – Functionality test using CHO cells

Purpose:

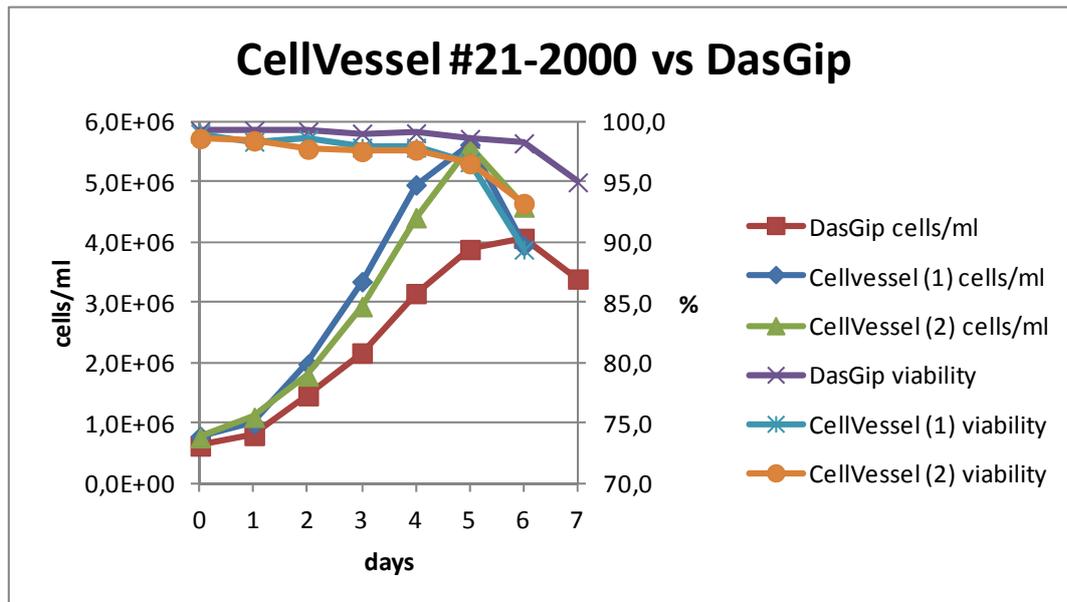
CHO cells (producing an antibody) cultured in two identical CellVessel stirred tank reactors (STR) with stator and in one DasGip STR without stator:

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

Results:

Shortly, the CellVessel STR's are fully functional (cells survive, multiply, and produce antibodies) and performs at least as good as the DasGip STR (for this specific cell line). Antibody produced* amounts to 69µg/ml and 82µg/ml for the two CellVessel STRs (average=76µg/ml) as compared to 76µg/ml for the single DasGip STR. Furthermore, the figure below clearly demonstrates that cell viability during exponential growth is almost the same for the two types of reactors (well above 97%). The maximal cell density achieved for the CellVessel STRs ($5,6E+06$ cells/ml) are somewhat higher than for the DasGip counterpart ($4,1E+06$ cells/ml).

*Antibody concentration (ELISA) measured in spent culture media harvested one day after peak of cell cultures (max. amount of live cells/ml). CerVessel: day 6. DasGip: day 7.



Experimental design:

- Suspension cultures of identical cells grown in two CellVessel STRs with stator for axial mixing (1500ml medium each) and one single DasGip STR (600ml medium) with radial mixing – same cell line but different passage #
- Batch-mode for all reactors (i.e. no perfusion and no sugar shots)
- Same CD-medium used for the three cultures
- Seeding density: DasGip $6,3E+05$ cells/ml: CellVessel approx. $7,7E+05$ cells/ml
- Both reactors are sparged from below
- The reactors are equipped with identical sensors (oxygen, pH, and temp.)
- The three reactors are guided by the same DasGip controllers
- Controller settings:
 - Oxygen tension: 30% of ambient air
 - pH 7,0
 - 37°C
 - Stirring: 80rpm
 - Aeration: 3L/hr