Technical Note

Tips for improving culture viability when switching to a new medium

Often, when changing from one brand of cell culture medium to another, cell viability and viable cell density (VCD) drops. This is because cells are exposed to a new environment, and it takes time for the cells to get adjusted. Following the recommended adaptation procedure (see 'CELLiST cell adaptation guidelines') will help provide smooth adaptation to the target medium. However, if issues of low cell viability still arise, here are a few suggestions that may help:

1) Adding several 'recovery passages' (passages using original media following thawing cells from liquid nitrogen). It is highly recommended to perform 3-4 recovery passages in original media, before starting adaptation to a new medium. This allows the cells to recover from the deep freeze in liquid nitrogen condition.

2) Adding additional adaptation steps to the sequential adaptation procedure may help cells adapt better to the new medium. For example, starting with 90%:10% (Original medium : Target medium), followed by 75%:25%, 50%:50%, 25%:75%, 10%:90%, and finally 0%:100%. Specifically, it is important to identify the step in which the sharp drop in viability occurs, and add additional adaptation steps prior to it in order to smooth the transition of the cells to the new medium.

3) Addition of growth factor: adding 50 µg/L of IGF-I (such as LONG® R3 IGF-I), or 5 mg/L Insulin, to the freshly prepared medium, right before cell seeding, will often help increase cell viability during the medium switch.

4) Addition of Glutamine (between 2-6 mM) is recommended (even for GS cell lines).

5) Making sure the original media doesn't contain some essential components that are required by the specific cell line. In that case, these components should be also added to the target medium.

6) Finally, consideration should always be made to the effect of pH on culture growth: using combination mixtures of 'Original medium : Target medium' media during adaptation procedure may result in alternating pH. It is important to always keep the pH of the medium constant and in the range of 6.8-7.2 prior to cell seeding.