

Life
Sciences

Enhanced Attachment of LNCaP Cells to the Corning® CellBIND® Surface

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A brief report
from the Corning
Applications Group

Abstract

Growth of certain adherent cell lines can be problematic due to poor attachment to traditional tissue culture treated surfaces. During recovery of cells from frozen cultures good initial cell attachment is very important, as poor attachment can lead to reduced cell yields and lost experimental time. Here we demonstrate the use of the patented Corning CellBIND Surface to improve the recovery and yield of LNCaP cells, a human prostate cancer cell line that is difficult to maintain due to its slow growth and poor attachment properties.

Methods and Results

To demonstrate the enhanced performance of the Corning CellBIND Surface, LNCaP cells were recovered from liquid nitrogen storage onto the Corning CellBIND Surface and standard tissue culture treated 25 cm² (T25) flasks using RPMI 1640 medium plus 10% fetal bovine serum. After 24 hours incubation at 37°C in 5% CO₂, flasks were harvested and cell counts were done by hemocytometer and viability determined by trypan blue exclusion. Each study was done in triplicate and repeated three times.

As can be seen in Figure 1 (left panel), after a 24 hour incubation period there is a significant increase in initial attachment of LNCaP cells on the Corning CellBIND Surface over a standard tissue culture treated surface. On average, the Corning CellBIND Surface showed a 49% increase in initial cell attachment over the standard tissue culture treated surface (two tailed t test, p value = 0.002). Importantly, when cultures were allowed to grow for 7 days, the Corning CellBIND Surface maintained the increased cell number relative to tissue culture treated cultures seen at 24 hours with over 64% more cells harvested from the Corning CellBIND Surface.

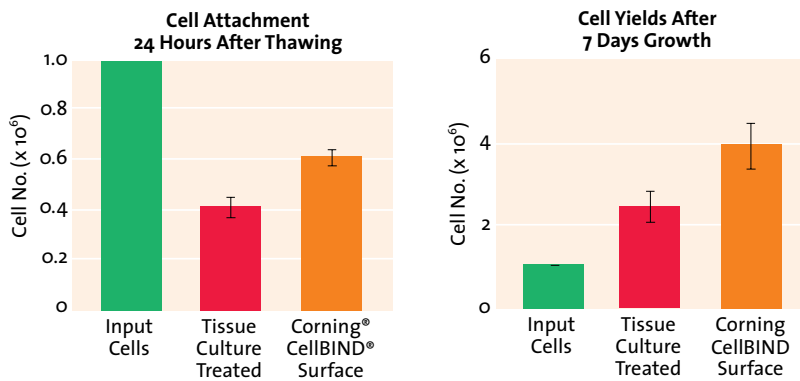


Figure 1. Left: Adherent cell recovery and growth of LNCaP cells 24 hours post-seeding. Data is average \pm standard error from 3 independent experiments. Right: Average \pm standard error from 3 independent experiments for 7 day growth after initial attachment.

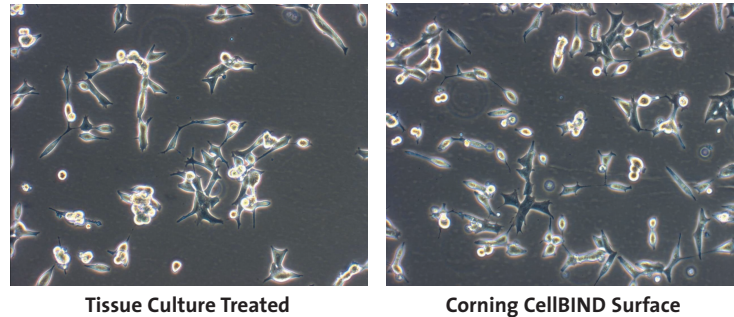


Figure 2. Attachment of LNCaP cells. Cells were thawed and plated onto the Corning CellBIND Surface (right) or tissue culture treated (left) T25 flasks. 24 hours post seeding a random field was viewed by light microscopy (100X magnification).

When viewed through a light microscope, LNCaP cells on the Corning® CellBIND® Surface exhibit enhanced adherence as indicated by 1) a greater number of cells with flattened morphology, 2) a broader distribution of cells and 3) less overall clumping of cells as compared to the standard tissue culture treated surface (Figure 2).

Conclusions

- ▶ On average, 49% more LNCaP cells attached to the Corning CellBIND Surface after 24 hours of culture as compared to a standard tissue culture treated surface.
- ▶ Plating of LNCaP cells on the Corning CellBIND Surface results, on average, in 64% greater cell recovery at 7 days as compared to a standard tissue culture treated surface.
- ▶ The Corning CellBIND Surface improves the adherent qualities of LNCaP cells, with cells exhibiting a more “spread out” morphology and better uniform distribution than a standard tissue culture treated surface.

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