

AB073. 134. Effects of IL-6 on primary and metastatic breast cancer cells in 2D and 3D culture systems

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Background: Breast cancer recurrence is extremely common. It is thought that cancer cells can evade therapy and survive for periods in a so called 'dormant state' following treatment for a primary tumour. Unlike 2D culturing, 3D culture systems have evolved to mimic natural environments that cells exist within and their development has allowed scientists to induce dormant states in tumour cells *in vitro*. This is extremely significant as uncovering mechanisms that permit cells to switch from dormant to proliferative states could potentially save lives. Studies have shown that the cytokine IL-6 has been associated with increased invasiveness of breast cancer cells but its effects

on dormant cancer cells have never been investigated.

Methods: Proliferation rates of both primary and metastatic breast cancer cell lines in 2D and 3D cell culture systems were measured using 96 titre assay. ELISA (enzyme-linked immunosorbent assay) was carried out to assess if endogenous IL-6 was produced by either cell line.

Results: 3D culture system induced dormancy in both primary and metastatic cell lines. Both cell lines produced minimal amounts of IL-6 endogenously. There was a minimal dose response to increased levels of IL-6 in 2D culture of both cell lines but this was not observed when the cells were cultured in 3D system.

Conclusions: The 3D culture system is effective in inducing dormancy and it has massive potential for future research. Although the IL-6 effect on proliferation was only seen in 2D culture, this is evidence that IL-6 effects should be investigated further.

Keywords: IL-6; breast cancer; dormancy; 2D culture; tumor

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