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Epithelial-to-mesenchymal transition markers are differently expressed in 2D and 3D cell cultures of prostate cancer cells

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Three-dimensional (3D) cell cultures allow to mimic the functions of living tissues and provide key information encoded in the tissue architecture [1]. Considered the pivotal role of epithelial-to-mesenchymal transition (EMT) in carcinoma progression, including prostate cancer (PCa) [2], we aimed at investigating the effect of the 3D arrangement on the expression of some key markers of EMT in cultured human prostate cancer (PCa) cells to better understand PCa cell behaviour.

PC3 and DU145 PCa cells were cultured in RPMI cell culture medium either in 2D-monolayers or in 3D-spheroids. The main EMT markers E-cadherin, N-cadherin, α-smooth muscle actin (αSMA), vimentin, Snail, Slug, Twist and Zeb1 were evaluated by confocal microscopy, real-time PCR and Western blot.

Confocal microscopy revealed that E-cadherin was similarly expressed at the cell boundaries on the plasma membrane of PCa cells grown in 2D-monolayers as well as in 3D-spheroids, but resulted up-regulated in 3D-spheroids, compared to 2D-monolayers, at the mRNA and protein level. Moreover, markers of mesenchymal phenotype were expressed at very low levels in 3D-spheroids, suggesting important differences in the phenotype of PCa cells grown in 3D-spheroids or in 2D-monolayers.

Considered as a whole, our findings contribute to a clarification of the role of EMT in PCa and confirm that a 3D cell culture model could provide deeper insight into the understanding of the biology of PCa.

References

[1] Hirschhaeuser et al. (2010) Multicellular tumor spheroids: an underestimated tool is catching up again. J Biotechnol 148: 3-15.
[2] Thiery and Sleeman (2006) Complex networks orchestrate epithelial-mesenchymal transitions. Nat Rev Mol Cell Biol 7: 131-42.

Key words
Epithelial-to-mesenchymal transition, prostate cancer, 3D-spheroids, E-cadherin.