BMC Proceedings

POSTER PRESENTATION Open Access

Co-expression of E- and P-cadherin in breast cancer: role as an invasion suppressor or as an invasion promoter?

Ana S Ribeiro[1*], Laura C Carreto[2], André Albergaria[1], Bárbara Sousa[1], Sara Ricardo[1], Fernanda Milanezi[1], Raquel Seruca[1], Manuel A Santos[2], Fernando Schmitt[1,3], Joana Paredes[1]

From 16th International Charles Heidelberger Symposium on Cancer Research
Coimbra, Portugal. 26–28 September 2010

Cadherins are cell-cell adhesion molecules. During tumor progression, their expression and/or function are frequently altered. E-cadherin down-regulation is often associated with tumor initiation and progression in breast cancer [1], whereas P-cadherin overexpression is associated with a worse patient survival [2] and with invasive breast cancer cells [3].

In this study, we aimed to understand if P-cadherin overexpression could interfere with E-cadherin invasion suppressor role in breast cancer.

Therefore, E- and P-cadherin expression was evaluated in a series of invasive breast carcinomas. P-cadherin over-expressing tumors often do not loose E-cadherin and tumors co-expressing both cadherins showed a more aggressive behavior and were related with the worst patient survival. Further, we performed *in vitro* studies by silencing both cadherins in BT-20 breast cancer cells. E- and P-cadherin co-expressing breast cancer cells showed increased cell invasion and migration capacities, when compared with the ones expressing only one cadherin. P-cadherin silencing led to increased levels of cell death, demonstrating it as a cancer cell survival signal. Also, microarrays of BT-20 cells, after E- and/or P-cadherin silencing, showed that the role of each cadherin alone is distinct from when these are co-expressed in the same cell, conferring different transcriptional programs.

We can conclude that E- and P-cadherin co-expression has an invasion promoter role in breast cancer cells and is a poor patient prognostic biomarker.

* Correspondence: aribeiro@ipatimup.pt
[1]IPATIMUP, Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal
Full list of author information is available at the end of the article

Author details
[1]IPATIMUP, Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal. [2]Department of Biology and CESAM, University of Aveiro, Aveiro, Portugal. [3]Medical Faculty of the University of Porto, Porto, Portugal.

Published: 24 September 2010

References

1. Cowin P, Rowlands TM, Hatsell SJ: **Cadherins and catenins in breast cancer.** *Curr Opin Cell Biol* 2005, **17**:499-508.
2. Paredes J, Albergaria A, Oliveira JT, Jerónimo C, Milanezi F, Schmitt FC: **P-cadherin overexpression is an indicator of clinical outcome in invasive breast carcinomas and is associated with CDH3 promoter hypomethylation.** *Clin Cancer Res* 2005, **11**:5869-5877.
3. Paredes J, Stove C, Stove V, Milanezi F, Van Marck V, Derycke L, Mareel M, Bracke M, Schmitt F: **P-cadherin is up-regulated by the antiestrogen ICI 182,780 and promotes invasion of human breast cancer cells.** *Cancer Res* 2004, **64**:8309-8317.

doi:10.1016/j.ceb.2005.08.014
Cite this article as: Ribeiro *et al.*: Co-expression of E- and P-cadherin in breast cancer: role as an invasion suppressor or as an invasion promoter?. *BMC Proceedings* 2010 **4**(Suppl 2):P47.