

Expression of Trop2 in bladder cancer is modulated by miR125b: in vivo and in vitro analyses

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Human trophoblastic cell surface antigen 2 (Trop-2) is a 40-kDa transmembrane glycoprotein, first identified as a cell surface marker for human trophoblast cells (1). Elevated expression of Trop-2 has been shown in several types of epithelial cancers and correlated with tumour aggressive and poor prognosis (2-3). The first aim of this study was to evaluate the variation of the Trop-2 expression in normal urothelium and urothelial bladder cancer. The immunohistochemical results showed an increase of Trop-2 levels in bladder cancer tissues with the increase of the severity of the pathology. Recent data identified Trop-2 as a target for miR-125b suggesting a possible role of miR-125b in the modulation of Trop-2 protein expression (4). The second aim was to verify if Trop-2 could be a target for miR-125b in bladder cells and to evaluate the possible role of miR-125b in the modulation of Trop-2 protein expression in normal bladder as well as in urothelial bladder cancer. In vitro we showed a contribution of miR-125b in deregulation of Trop-2 protein expression in a bladder cell line and we found that the expression of miR-125b was inversely correlated with the expression of Trop-2 protein on a cohort of bladder cancer tissues. We concluded to investigate in a larger population the use of Trop-2 and/or miR-125b as potential diagnostic markers in urothelial bladder cancer.

References

- [1] Lipinski et al. (1981) Human trophoblast cell-surface antigens defined by monoclonal antibodies. *Proc Natl Acad Sci U S A* 78(8):5147-50.
- [2] Goldstein et al. (2008) Trop2 identifies a subpopulation of murine and human prostate basal cells with stem cell characteristics. *Proc Natl Acad Sci U S A* 105(52):20882-7.
- [3] Goldstein AS, Huang J, Guo C, Garraway IP, Witte ON. Identification of a cell of origin for human prostate cancer. *Science*. 2010 Jul 30;329(5991):568-71.
- [4] Nakanishi et al. (2014) Loss of miR-125b-1 contributes to head and neck cancer development by dysregulating TACSTD2 and MAPK pathway. *Oncogene* 33(6):702-12.

Keywords

Bladder cancer; Trop2; miR125b.