

CD10 is a Marker of Goat Mammary Cancer

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COLUMN ARTICLE

CD10 is a zinc dependent metalloproteinase that cleaves various biological peptides. Initially, it was known to be expressed in acute lymphoblastic leukemia hence, alternatively called Common Acute Lymphoblastic Leukemia Antigen (CALLA). Over expression of CD10 has been associated with various carcinomas including prostate cancer, lung carcinomas, colon cancer, retinoblastoma and breast cancer [1]. In mammary glands, myoepithelial cells are true epithelial cells (express cytokeratins like CK5 and CK14) and present between luminal epithelial cells (express cytokeratin like CK19) and stroma. Myoepithelial cells are the “guardians” of breast cancer as it maintains tissue architecture and cells polarity [2]. Breast cancers mainly arise from luminal epithelial cells. Presence of myoepithelial cells suppresses breast cancer progression. It has been seen that fully differentiated myoepithelial cells are outnumbered by cancer cells and even fully replace them in invasive carcinomas [3]. CD10 is expressed in normal cells like lymphoid stem cells and mammary myoepithelial cells. However, CD10 does not express in stromal compartment mammary gland. Studies on CD10 expression in stroma were suggested in invasive carcinomas of breast and gastric glands [4,5]. In this study, we have investigated immunolocalization of CD10 in goat mammary cancer. Abnormal cyto-architecture of goat mammary epithelial cells indicated us to examine with can-

cer cell marker like CD10. Immunostaining of mammary cancer tissue and normal tissue with CD10 and analyzing images using, Image J [6], we found a very high expression (27.94 +/- 0.93%) of CD10 in the stroma of mammary cancer (Figure 1A-B). In normal glands, CD10 expression was limited to myoepithelial cells (3.40 +/- 0.56%) as lining of normal alveolar and ductal structures (Figure 1C-D). Expression of CD10 in goat mammary cancer was significantly high ($P = 9.0E-08$) in comparison to normal glands. Finally, our results were in consistent with findings of other researchers who have investigated CD10 expression in stromal compartment of mammary cancer. This study suggests CD10 as a prognostic marker of goat mammary cancer. It is interesting to note that CD10 is common cancer cell markers of human breasts and goat mammary cancer, given that incidence of goat mammary cancer is rare.

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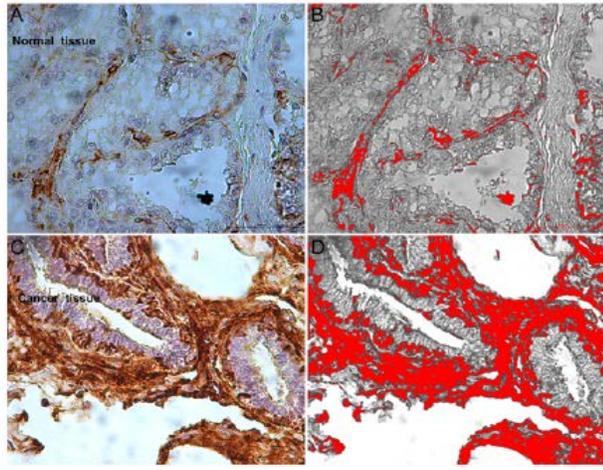


Figure 1: Immunolocalization of CD10 in normal and cancer tissue of goat mammary glands. Over expression of CD10 in stromal compartment was evident in mammary cancer. Expression of CD10 in normal mammary tissue (Panel A) with its pseudo colored image (Panel B) to calculate the percentage of stained area. In mammary cancer, expression of CD10 was observed in the basal layer of epithelium and stroma (Panel C) shown with the percentage of stained area (Panel D). Scale bar = 100 μ m.

- Schneider CA., *et al.* "NIH Image to ImageJ: 25 years of image analysis". *Nature Methods* 9 (2012): 671-675.

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BIBLIOGRAPHY

- Makretsov NA., *et al.* "Stromal CD10 expression in invasive breast carcinoma correlates with poor prognosis, estrogen receptor negativity, and high grade". *Modern Pathology* 20 (2007): 84-89.
- Gudjonsson T., *et al.* "Myoepithelial Cells: Their origin and function in breast morphogenesis and neoplasia". *Journal of Mammary Gland Biology and Neoplasia* 10 (2005): 261-272.
- Gusterson BA., *et al.* "Distribution of myoepithelial cells and basement membrane proteins in the normal breast and in benign and malignant breast diseases". *Cancer Research* 42 (1982): 4763-4770.
- Mohammadizadeh F., *et al.* "CD10 expression in stromal component of invasive breast carcinoma: A potential prognostic determinant". *International Journal of Research in Medical Sciences* 12 (2012): S194-S199.
- Taghizadeh-Kermani A., *et al.* (2014): "The Stromal Over expression of CD10 in Invasive Breast Cancer and its Association with Clinicopathologic Factors". *Iranian Journal of Cancer Prevention* 7 (2014): 17-21.