Advantages of Cytokeratin 5+14 on Benign Prostate Tissue

The detection of PIN (prostate intraepithelial neoplasia) involves distinguishing the neoplastic tissue in prostate biopsies from the benign glandular tissue. Historically, the most commonly used high molecular weight keratin for labeling benign prostate glands has been cytokeratin 34betaE12, also known as cytokeratin 903. This can possibly be attributed to cytokeratin 34betaE12 being one of the earliest and most widely published clones to be cited for use in labeling benign prostate myoepithelial cells.[1]

However, recent findings have suggested that the use of different high molecular weight keratins is preferred over cytokeratin 34betaE12 due to consistency and higher sensitivity in labeling benign prostate glands. Inconsistency of cytokeratin 34betaE12 may be attributed to fixation protocol differences as stated in literature.[2] In another study, cytokeratin 34betaE12 showed only a 40% sensitivity of staining benign glands compared to cytokeratin 5&6.[3] This evidence shows that while cytokeratin 34betaE12 has been the most commonly used marker for prostate glandular epithelium labeling, it is far from the best.

High molecular weight cytokeratin 5+14 are expressed as a pair in basal cells of stratified epithelia, where they occur as bundled arrays of filaments.[4] When combined, these two keratins show a much higher sensitivity towards benign prostate myoepithelial cells than cytokeratin 34betaE12, as well as a much higher sensitivity towards "basal" epithelium in the breast than cytokeratin 5&6.[5] This may be explained by the lack of evidence for cytokeratin 6 messenger RNA expression in normal breast and basal-like carcinomas.[5]

This evidence, in addition to the superior staining of cytokeratin 5+14 in comparison to cytokeratin 34betaE12 and cytokeratin 5&6, supports using cytokeratin 5+14 routinely *for both prostate and breast* myoepithelial cell identification.

Ordering Information

Cytokeratin 5+14	Cat. No.
1 ml predilute	905H-07
7 ml predilute	905H-08

1. Hedrick L, et al. Use of keratin 903 as an adjunct in the diagnosis of prostate carcinoma. Am J Surg Pathol. 1989; 13:389-96.
2. Hammed O, et al. Immunohistochemistry in the diagnosis of minimal prostate cancer. Current Diagnostic Pathology. 2006; 12:279-291.
3. Abrahams NA, et al. Validation of cytokeratin 5/6 as an effective substitute for keratin 903 in the differentiation of benign from malignant glands in prostate needle biopsies. Histopathology. 2002; 41:35-41.
4. Bousquet O, et al. The nonhelical tail domain of keratin 14 promotes filament bundling and enhances the mechanical properties of keratin intermediate filaments in vitro. J Cell Biol. 2001; 155:747-54.
5. Bhargava R, et al. CK5 is more sensitive than CK5/6 in identifying the "basal-like" phenotype of breast carcinoma. Am J Clin Pathol. 2008; 130:724-30.

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