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KEY WORD : BASEMENT MEMBRANE / MAb 170

GUN ANATASOMBOON: HISTOLOGICAL DISTRIBUTION OF MONOCLONAL ANTIBODY 170 (MAb 170) AGAINST ISOLATED RAT GLOMERULAR BASEMENT MEMBRANE (GBM) TO NEWBORN RAT TISSUES. THESIS ADVISOR: VIJITRA LEARDKAMOLKARN, Ph.D., REON SOMANA, M.D.,Ph.D., BOONSIRM WITHYACHUMNARNKUL, M.D.,Ph.D., GALAYANEE DOUNGCHAWEE, M.S. 59 P. ISBN 974-589-106-1

Basement membrane is a special form of extracellular matrix that contains a number of protein components, such as collagen IV, laminin, heparan sulfate proteoglycan, fibronectin, entactin and other unidentified proteins. These components serve as structural support and play roles in cell behaviors during development. They also participate in specific functions of some organs such as filtration barrier in the kidney. The knowledge of how basement membrane components are organized and how it performs the different functions in such organs are still limited. However, alteration in basement membrane component epitopes expression has been investigated in normal and disease and brought about the discovery of component isoforms. Such isoforms were assigned to specific developmental form and disease form.

In attempt to define new components in the basement membrane, monoclonal antibodies against rat glomerular basement membrane were produced in mice. A monoclonal antibody 170 was selected to be characterized for the distribution information, in this study, by immunofluorescence study. Tissues from kidney, lung, liver, small intestine, suprarenal gland and testis were processed for direct and indirect immunofluorescence labeling with MAb 170 and examined under fluorescent microscope. The studies were compared between the newborn and the adult tissues. In the kidney of newborns, the immunofluorescent reaction was presented in a linear pattern along the forming basement membranes of immature and young mature glomeruli, mesangial matrix and throughout the tubular basement membrane. In adults, however, the immunoreactivity for MAb 170 in the glomeruli was localized only to the vascular poles and mesangial matrix. It was significantly decreased from the peripheral loop glomerular basement membrane (GBM). The localization in the other organs have not showed much difference in the pattern but increased in the intensity once the tissue became mature. In the lung, immunofluorescence labeling of MAb 170 was visualized in the basement membrane of bronchus, bronchiole, pulmonary vessels and the alveolar septum. In the liver, mild intensity was observed in the basement membrane of hepatic sinusoid but stronger intensity in the central vein and portal vessels. In the small intestine, the intensity of bound antibody was higher in the intestinal wall than in the crypt and villi structure. In the adrenal gland, bright linear fluorescence intensity was seen around cells in the cortex as well as in the medulla. In the testis, binding of the antibody was less in the basement membrane of newborn seminiferous tubules and parenchymas when compared to the puberty and adult testis. The results suggest that antigen 170 may be the general epitope of a component in the basement membrane of several tissues but it seems to be a specific antigen expressed only in the kidney during developing stage. Whether the loss of this antigen in the adult represent the masking of epitope or a changing in peptide chain of the component is interesting and needs to be further investigated at the molecular level.