P-34

흰쥐콩팥에서 Label-retaining cells (LRCs)의 발현

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Identification of Label-retaining cells (LRCs) in the Rat Kidney

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Purpose : Adult stem cells often have a low cycling rate and contributes to repair after injury. One of the most common methods to identify stem cells is to search for slow-cycling cells by labeling their DNA. Recently, the existence of label-retaining cells (LRCs) in normal rat kidneys by in vivo 5-bromo-2'-deoxyuridine (BrdU) labeling was examined. Potassium depletion induces hypertrophy and hyperplasia of intercalated cells (IC) and principal cells (PC). In contrast, potassium repletion induces regression of these changes. The purpose of this study was to examine the time-course of the changes of the expression of LRCs in the normal rat and potassium-depleted rat.

Methods : To obtain animals with BrdU-label retaining cells (LRCs), pregnant Sprague-Dawley rats were given 50 μg/g BrdU intraperitonealy three times daily for 3 days, embryonic day from (E) 18 to (E) 21. H+-ATPase and AE1 were used to identify IC, and AQP2 was used to identify PC. LRCs were identified with an antibody against BrdU.

Results : In the cortex, BrdU-positive cells are localized mainly at E 20, but BrdU-positive cells after birth were rapidly decreased. In the medulla, the numerous BrdU-positive cells were markedly decreased after, while the expression of BrdU-positive cells in the middle part (IMm) and terminal part of inner medulla (IMt) were not changes. In adult rats, BrdU-positive cells were remained in the IMm and IMt, which were mainly localized inner medullary collecting duct except a few BrdU-positive cells in the interstitium. In potassium-depleted group, BrdU-positive cells were not almost observed in the inner stripe of outer medulla (ISOM) and initial part of inner medulla (IMi) compared with control groups, but, BrdU-positive cells in the IMt did not differ.

Conclusion : In conclusion, the most LRCs localized among renal epithelial tubule cells of the renal papilla, and these cells is a important evidence of adult kidney stem cells.

Key Words : 성체줄기세포, label-retaining cells
Adult stem cells, Label-retaining cells, BrdU