ラット腎細胞におけるカテプシンBの局在部位
2. Protein A－金法を用いた免疫電子顕微鏡的研究

横田　貞記*，辻　　宏，加藤敬太郎**

The Journal of Histochemistry and Cytochemistry Vol.34, No.7, pp.899–907, 1986

Immunocytochemical Localization of Cathepsin B in Rat Kidney. II. Electron Microscopic Study Using the Protein A－gold Technique

Sadaki YOKOTA*, Hiroshi TSUJI, and Keitaro KATO**

ABSTRACT: Thin sections of Lowicryl K4M－embedded materials were labeled with protein A－gold complex. Gold particles representing the antigen sites for cathepsin B were exclusively confined to lysosomes of each segment of the nephron. The heaviest labeling was noted in the lysosomes of the S1 segment of the proximal tubules. Labeling intensity varied considerably with the individual lysosomes. Lysosomes of the other tubular segments, such as the S2 and S3 segments of the proximal tubules, distal convoluted tubules, and collecting tubules were weakly labeled by gold particles. Quantitative analysis of labeling density also confirmed that lysosomes in the S1 segment have the highest labeling density and that approximately 65% of labeling in the whole renal segments, except for the glomerulus, was found in the S1 segment. These results indicante that in rat kidney the lysosomes of the S1 segment are a main location of cathepsin B. Further precise observations on lysosomes of the S1 segment revealed that apical vesicles, tubules, and vacuoles were devoid of gold particles, but when the vacuoles contained fine fibrillar materials, gold labeling was detectable in such vacuoles. As the lysosomal matrix becomes denser, the labeling density is increased. Some small vesicles around the Golgi complex were also labeled. These results indicate that the endocyctotic apparatus including the apical vesicles, tubules, and vacuoles contains no cathepsin B. When the vacuoles develop into phagosomes, they acquire this enzyme to digest the absorbed proteins.

KEY WORDS: Immunoelectron microscopy; Cathepsin B; Lysosomes; Proximal tubule; Rat kidney.

抄録　ラット腎臓におけるカテプシンBの局在部位について、免疫電顕で検討した。カテプシンBは近位尿細管のS1分節のリソゾームに局在していることが明らかとなった。更に詳細に調べると、エンドサイトーシスの初期過程であるapical vesicles, tubules, vacuolesにはカテプシンBは見られず、ファゴゾームに認められた。この結果は蛋白質の分解がファゴゾームの形成とともに開始されるが、それ以前の過程では起らないことを示唆している。

*　Yamanashi Medical School　山梨医科大学

**　Faculty of Pharmaceutical Science, Kyushu University　九州大学，薬学部