

Distributional Patterns of Phospholipase C Isozymes in Rat and Rabbit Kidneys

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In the kidney, the nephron exhibits a unique structural, functional and biochemical axial heterogeneity as it runs through cortex and medulla. A number of distinct PLC isoforms have been identified in mammalian tissues. To know the distribution pattern of PLC isozymes in the kidney, antibodies to isozymes, PLC- β , PLC- γ_1 and PLC- δ_1 , were used in this study. In rat, the kidney was dissected into four regions, that is the cortex, the inner stripe and outer stripe of the outer medulla and the inner medulla. All three PLC isozymes were present in whole regions although their distribution patterns were different clearly. PLC- γ_1 showed even distribution throughout the whole region. PLC- β was present in the inner medulla with the highest density, but the concentration of PLC- β in the outer stripe of the outer medulla was very low. The density of PLC- δ_1 showed gradual increase from the cortex to the inner medulla. This pat-

tern appeared very similar to the osmotic gradient in the kidney. The levels of sodium, chloride, urea and osmolality increased along the corticopapillary axis and their levels were highest in the inner medulla like PLC- δ_1 . This pattern of PLC- δ_1 suggests that there would be a intimate relationship between PLC- δ_1 and regulation of osmolality in the medullary cells. In rabbit, the kidney was further dissected into 7 regions through corticopapillary axis. PLC- γ_1 showed relatively even distribution through whole regions. The distribution pattern of PLC- δ_1 was very similar to that of the rat kidney, that was lowest in the cortex and highest in the papillary tip. The results suggest that the distinct patterns of the PLC isozymes may be associated with different signal transduction along the corticopapillary axis and possible role of PLC- δ_1 in the osmoregulation of the cells of the medullary region.