Abstract: Retention of inorganic phosphate (Pi) and associated hyperphosphatemia are important in the development of hyperparathyroidism secondary to renal failure. The beneficial effect of a low-Pi diet in the prevention of hyperparathyroidism can be attributed to the decrease in PTH secretion. This effect of Pi may be mediated by specific molecules in the parathyroid cell membrane. A complementary DNA encoding a Na⁺-Pi co-transporter, termed rat PiT-1, has been isolated from rat parathyroid. The amount of PiT-1 mRNA in the parathyroid is controlled by vitamin D and dietary Pi, which are the most important regulators of PTH secretion. The parathyroid Pi transporter may mediate the effects of extracellular Pi and PTH secretion in secondary hyperparathyroidism.

In this study, we focus on the function of Na/Pi co-transporters in the parathyroid glands as inorganic Pi sensor. J. Med. Invest. 47: 118-122, 2000

Keywords: parathyroid, phosphate, transporter, secondary hyperparathyroidism, vitamin D
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Renal proximal tubular cells

Parathyroid cell

Calcium sensing receptor

$\text{Ca}^{2+}$ store

$\text{Ca}^{2+}$

$\text{Ca}^{2+}$

Dietary $\text{Pi}$

Na/Pi co-transporter

$\text{Pi}$ transporter in parathyroid glands

K. Miyamoto et al.
(ii) Parathyroid cells

in vitro
K. Miyamoto et al. Pi transporter in parathyroid glands