S02-2 Function and localization of vesicular nucleotide transporter in rodents

◯Miki HIASA[1], Keisuke SAWADA[1], Noriko ECHIGO[1], Takaaki MIYAJI[1], Yoshinori MORIYAMA[1]
[1]Okayama Univ. Gra. Sch. Med.Den.Pharma. Sci.

ATP is a major chemical transmitter in purinergic signal transmission. Before binding to the purinoceptors, ATP is stored in secretory vesicles and exocytosed from ATP-secreting cells. Although molecule(s) responsible for the vesicular storage of ATP has been explored for a long time, we have recently identified 9th member of SLC17 type I phosphate transporter in humans as a vesicular ATP transporter. Since this transporter recognizes various nucleotides as transport substrates, we called it vesicular nucleotide transporter (hVNUT). Suppression of endogenous VNUT expression decreased exocytosis of ATP. In the present study, we identified rodent counterpart (rVNUT), and investigated its transport properties and localization. Like hVNUT, rVNUT transports various nucleotides at the expense of inside positive membrane potential, and requires chloride ion for its transport activity. Immunohistochemistry with specific antibodies revealed that rVNUT is expressed in various ATP-secreting cells, which includes neuron, astrocyte and various endocrine cells. These results indicate that rVNUT is the useful molecular probe leading to the elucidation of the molecular mechanism of ATP secretion in purinergic signal transmission.