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EXOCYTOTIC ATP FROM UROTHELIUM MAINTAINS THE NORMAL BLADDER STORAGE FUNCTION

Hypothesis / aims of study
ATP is an important substance in bladder function (1). Vesicular Nucleotide Transporter (VNUT) involved in exocytosis of ATP strongly expressed in the bladder urothelium (2). VNUT Knock out (KO) mice show frequent urination without a change in voiding function. One of the causes is the reduction of bladder compliance which based on the difficulty of the bladder urothelium surface area expansion (2). However all mechanism is unclear, here we underwent organ bath studies.
Study design, materials and methods
All experiments were performed by using 8-14 week old male C57BL/6 mice (WT) and VNUTKO mice backcrossed (for eight generations) on a C57BL/6 background. Bladder strips (with or without urothelium) were subjected to a resting tension of 1 g and allowed to stabilize for at least 30 min. Contractions were recorded as changes in tension from baseline in response to 60 mM KCl, carbachol, and electrical field stimulation (EFS). All tissue responses were normalized to gram tissue weight.
Results
The bladder without urothelium from VNUTKO mice showed a higher contractile response to 60 mM KCl compared with WT, but no change between bladders with urothelium. There was no difference in contractions by carbachol between WT and VNUTKO bladders with the presence of urothelium (Fig1). In the absence of urothelium, the responses to carbachol (Fig1) and EFS were higher in VNUTKO mice than WT mice
Interpretation of results
The contraction of bladder smooth muscle in VNUTKO mice was strongly enhanced that may show the pathological state.
Concluding message
Exocytotic ATP released from urothelium could maintain the normal bladder storage function.

Fig.1 Carbachol concentration-response

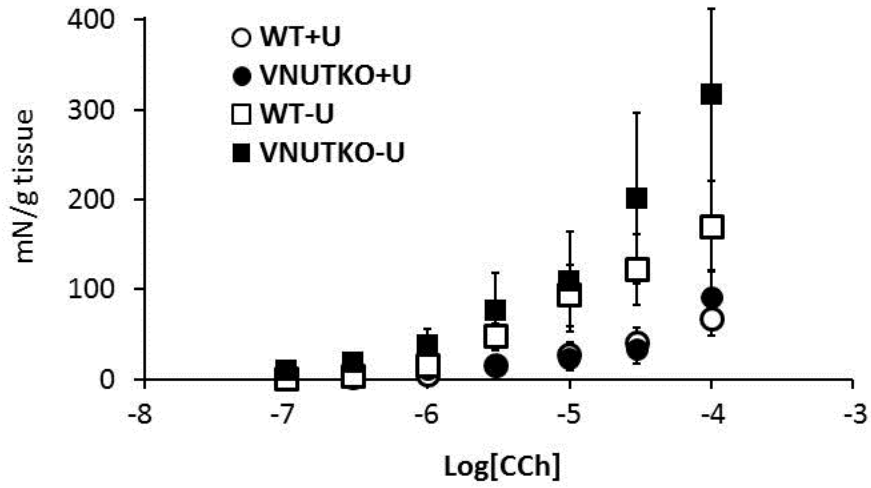
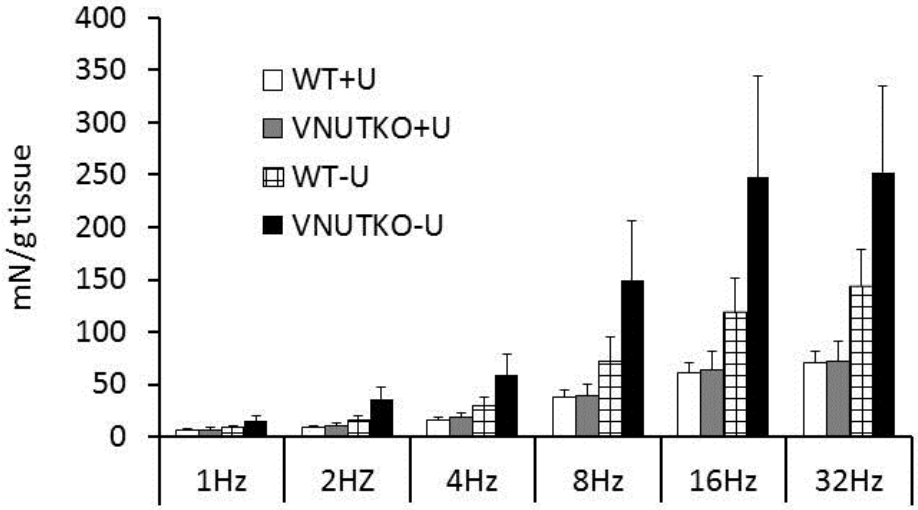


Fig.2 **EFS**



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Disclosures
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