

GENE EXPRESSION PATTERNS OF ACID-SENSING ION CHANNELS (ASICS) FAMILIES IN MAMMALIAN BLADDER

Hypothesis / aims of study

Acid-sensing ion channels (ASICs) are key receptors for extracellular protons and may underlie the acid-evoked pain perception. We previously reported the gene expression patterns of ASICs families in mice bladder.

Our final aim of this study is application of basic research to human physiology.

So this time, we investigated other mammalian species (rat and human).

Study design, materials and methods

The bladders of female rats were harvested to quantify the expressions of ASICs families. The bladder samples of human were obtained from female patients without lower urinary tract symptoms who underwent total cystectomy due to bladder carcinoma. RT-PCR was performed with a Smart Cycler System using SYBR green I as the fluorogenic dye. The gene-specific primer for each ASIC was designed with the online program Primer3. The expression was normalized as the ratio to beta-actin expression. Amplified PCR products were electrophoresed on 2% agarose gel and visualized with ethidium bromide.

Results

ASIC1, ASIC2, ASIC3 genes were expressed in rat bladders. ASIC2 gene was most abundant in rat bladder, ASIC1 gene was secondary abundant. The expression patterns of these genes were almost same as mice. The expression levels, which were normalized as the ratio to beta-actin, were lower than mice.

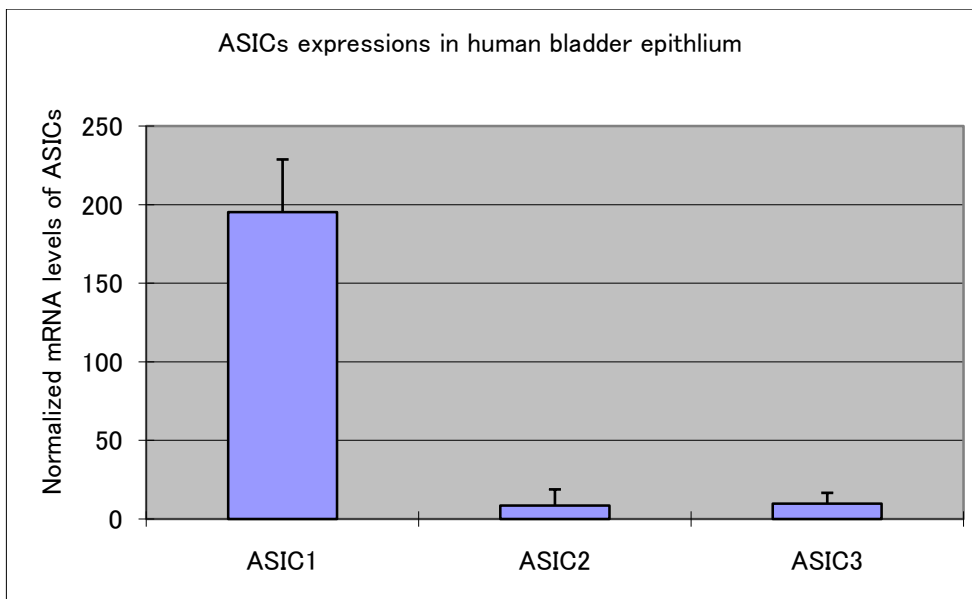
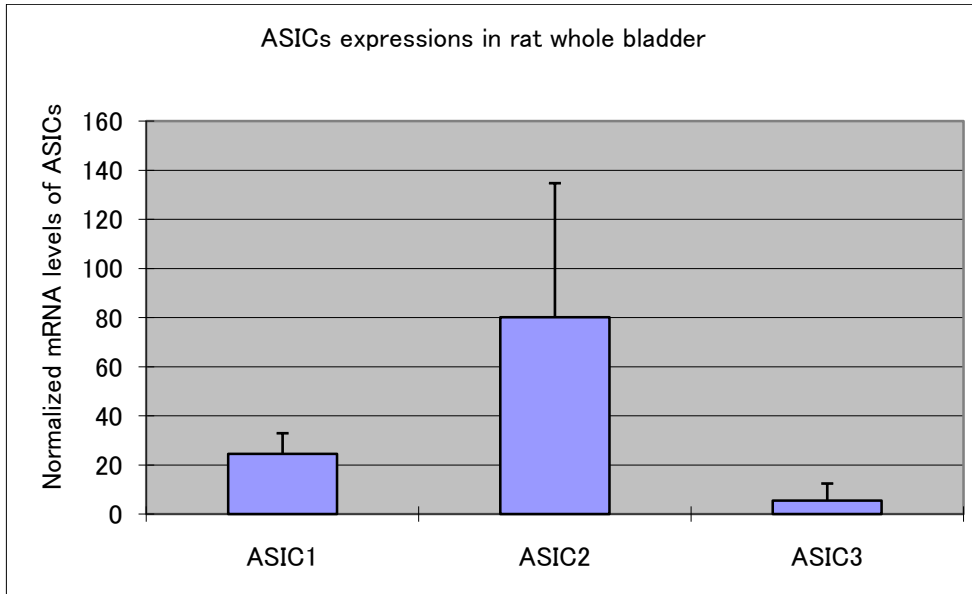
These three genes were also expressed in human bladder. The expression patterns were slightly different from these rodents. ASIC1 gene was most abundant in human bladder epithelium. As concerns bladder epithelium, this expression pattern is just like a mice bladder epithelium.

Interpretation of results

The expression patterns of ASICs in rat bladder epithelium have not investigated yet. Further study might be necessary to determine the best rodent which is useful for basic study.

Concluding message

The gene expression patterns of ASICs families in human bladder epithelium were almost same as those in mice bladder epithelium. The experiments using mice bladder is very useful for these reasons.



Specify source of funding or grant	none
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Ethical committee, University of Yamanashi
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes