ONLINE ISSN : 1880-313X
PRINT ISSN : 0388-6107

Biomedical Research
Vol. 29 (2008) , No. 5 October pp.239-244

[PDF (3153K)] [References]

The involvement of urothelial α_{1A} adrenergic receptor in controlling the micturition reflex

Haruko Yanase[1)], Xiaojun Wang[1)], Yoshiharu Momota[1)], Toshie Nimura[1)] and Masahito Kawatani[1)]

1) Department of Neurophysiology, Akita University School of Medicine

(Received June 30, 2008)
(Accepted July 31, 2008)

ABSTRACT

The current study was undertaken in an attempt to characterize the functional properties of urothelial α_{1A} adrenergic receptors, especially in modulating the micturition reflex. The expression of α_{1A} receptors in rat bladder was analyzed by immunohistochemistry and Western blotting. As a functional study, we obtained continuous infusion cystometrograms in conscious rats using noradrenaline (NA) and subtype selective α_1 adrenergic receptor antagonists, tamsulosin (α_{1A}/α_{1D} selective) and silodosin (α_{1A} superselective). α_{1A} receptors were immunohistochemically detected in rat urothelium. Intravesical infusion of NA (60 μM) significantly shortened the intercontraction interval (ICI). Pretreatment with tamsulosin at a dose of 0.4 μg/kg i.v. abolished intravesical NA infusioninduced reduction of ICI. Neither intravesical infusion of tamsulosin (20 μM) nor that of silodosin (0.2 μM) significantly altered ICI. After intravesical infusion of silodosin, intravesical NA infusion did not affect ICI. Urothelial α_{1A} receptors might modulate bladder afferent activity under pathophysiological conditions with augmented concentrations of NA in blood or urine.

doi:10.2220/biomedres.29.239

JOI JST.JSTAGE/biomedres/29.239