

How Serotonin is Related with Lower Urinary Dysfunction

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5-Hydroxytryptamine (5-HT; serotonin) is widely involved in human physiology [1–3]. The actions of 5-HT are mediated both by nervous and humoral activities [4–7]. The function of 5-HT has been established as a neural transmitter for the central nervous system [8]. 5-HT may evoke excitation and inhibition, and some of the effects appear to be evoked by the release of other transmitters [9]. This special issue contains three articles that focus on the contribution of 5-HT on the lower urinary tract (LUT) function. A wide variety of 5-HT receptor subtypes are variably expressed in bladder urothelium [10], smooth muscle [11], autonomic excitatory nerve terminals [12], and central pathways controlling the micturition reflex [13]. 5-HT has both physiological and pathological functions in the LUT [14].

This issue begins with a review by Matsumoto-Miyai et al. of the regulatory effects of 5-HT receptors on LUT function. The

function of the 5-HT varies in a species- and site-dependent manner. Numerous 5-HT receptor subtypes which present in the LUT have suitably specific expression and/or activity to represent promising drug targets for the treatment of LUT symptoms.

The second paper by Michishita et al. discusses mast cell accumulation in rat bladder with partial bladder outlet obstruction (BOO). They conclude that mast cells contain 5-HT and are more abundant locally in the subserosal layer of partial BOO rat bladders. 5-HT released from mast cells can stimulate 5-HT₂ receptors on the detrusor muscle and may cause storage symptoms.

The third paper by Imamura et al. focuses on expression of 5-HT receptors in human bladders with benign prostatic hyperplasia (BPH). The expression levels of 5-HT_{2B} and 5-HT₄ mRNA are similar between the BPH group and the normal group. The expression of 5-HT_{2A} mRNA is significantly lower, while the expression of 5-HT_{3A} and 5-HT₇ mRNA is significantly higher in the BPH group than the normal group. Targeting 5-HT_{3A} and 5-HT₇ receptors in patients with BPH might be useful therapies for BPH related LUT symptoms.

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