

Author: [ADVANCED](#)Volume Page Keyword: [TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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[\[PDF \(349K\)\]](#) [\[References\]](#)**Comparison of the effect of anti-muscarinic agents on bladder activity, urinary ATP level, and autonomic nervous system in rats**[Saori Nishijima](#)¹⁾, [Kimio Sugaya](#)¹⁾, [Katsumi Kadekawa](#)¹⁾, [Hidekatsu Naka](#)¹⁾ and [Minoru Miyazato](#)¹⁾

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ABSTRACT

We compared the effect of 4 anti-muscarinic agents on bladder activity, urinary ATP levels, and autonomic nervous system in rats. Rats were divided into the following 5 groups (control group, oxybutynin group, propiverine group, tolterodine group, imidafenacin group), and were administered daily the designated anti-muscarinic agent or distilled water into the stomach. After 2 weeks, we performed 1) continuous cystometry with physiological saline and 0.1% acetic acid solution, 2) measurement of urinary ATP level before and after bladder stimulation, and 3) measurement of the heart rate, blood pressure and plasma catecholamines. The maximum bladder contraction pressure increased and the interval between contractions became shorter during cystometry with acetic acid solution in the control group, but not in the 4 anti-muscarinic agent groups. The urinary ATP level increased after bladder stimulation in all groups, but the increase was smaller in the propiverine and imidafenacin groups. The plasma noradrenaline and dopamine levels of the propiverine group were higher. Taken together, all anti-muscarinic agents inhibited the bladder activity without changing the heart rate and blood pressure. Especially, the inhibitory effect of propiverine and imidafenacin on bladder activity may be partly due to blocking an increase of ATP release from the bladder urothelium.

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