

# 学位論文の要旨

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主論文の題名			
<b>Suppression and recovery of voltage-gated currents after cocaine treatments of olfactory receptor cells</b>			
主論文の要旨			
<p>Cocaine (1 to 5% concentrations) is commonly used as a local anesthetic for the otorhinolaryngeal surgery of the nasal cavity. Recent reports indicate that some patients complain of olfactory deficits after surgery, and decreased olfaction is found in cocaine abusers. In spite of these reports, the effects of cocaine on the olfactory receptor cells are unknown. Effect of cocaine was examined in olfactory receptor cells isolated from the newt. Under the voltage clamp with the whole-cell recording configuration, the voltage-gated currents were recorded when the membrane potential was depolarized (holding potential: -100 mV). When cocaine was applied by a puff pressure (5%) and the extracellular solution, the voltage-gated currents, including inward and outward components, were significantly reduced. The dose-suppression curves of cocaine for sodium and potassium currents could be fitted by the Hill equation. Half-blocking concentration of sodium and potassium currents were 43 <math>\mu\text{M}</math> and 54 <math>\mu\text{M}</math>; Hill coefficient was 1.1 and 0.9 respectively. This rapid and complete recovery from the suppression was confirmed even after the treatments with the high concentration cocaine. This fact implies that cocaine does not affect olfactory ability after locally-high dose treatments of nasal cavity in surgical operation.</p>			

(注) 2, 000字以内にまとめて記入すること。