

EXPANDED ABSTRACT

Effects of pilocarpine and cevimeline on Ca²⁺ mobilization in rat parotid acini and ducts

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Abstract : Previous reports suggested that there is no significant difference in the binding affinity of pilocarpine and cevimeline on muscarinic receptors (1). However, *in vivo* studies from our laboratory suggested that pilocarpine-induced salivation from the parotid gland is greater than that induced by cevimeline in rats (2, 3). Therefore, in the present study, sialogogue-induced intracellular Ca²⁺ mobilization was investigated in isolated parotid gland cells *in vitro*. Pilocarpine and cevimeline increased the intracellular Ca²⁺ concentration of parotid gland acinar and duct cells over 1 μM in a dose-dependent manner. Pilocarpine-induced responses were higher than cevimeline-induced responses. Ca²⁺ responses to both agents were completely blocked by 1 μM 4-DAMP, an M3 muscarinic receptor antagonist. In the absence of extracellular Ca²⁺, both sialogogues induced transient Ca²⁺ increase in parotid gland acinar cells. These results suggest that the sialogogues stimulate some common routes via the Ca²⁺ signaling in parotid gland acinar cells. We also report a significant difference of Ca²⁺ responses in concentration between pilocarpine and cevimeline in parotid gland acinar cells. The different Ca²⁺ responses between the sialogogues would explain the different saliva volumes from the parotid gland between them that we have observed in previous *in vivo* studies (2, 3). *J. Med. Invest.* 56 Suppl. : 375, December, 2009

Keywords : pilocarpine, cevimeline, parotid cells

ACKNOWLEDGEMENTS

This work was supported by Grants-in-Aid from the Ministry of Education, Culture, Sports, Science and Technology, Japan, for Scientific Research for Young Scientists (B) to K.O. (20791357) and for Scientific Research (C) to K.I. (90131903).

Received for publication October 13, 2009 ; accepted October 20, 2009.

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