

Selective activation of carotid nerve fibers by acetylcholine applied to the cat petrosal ganglion in vitro

Alcayaga, Julio

Iturriaga, Rodrigo

Varas, Rodrigo

Arroyo, Jorge

Zapata, Patricio

The petrosal ganglion innervates carotid body chemoreceptors through the carotid (sinus) nerve. These primary sensory neurons are activated by transmitters released from receptor (glomus) cells, acetylcholine (ACh) having been proposed as one of the transmitters involved in this process. Since the perikarya of primary sensory neurons share several properties with peripheral sensory endings, we studied the electrical responses of the carotid nerve and glossopharyngeal branch to ACh locally applied to the cat petrosal ganglion superfused in vitro. Ganglionic applications of AChCl (1 μ g - 1 mg) generated bursts of action potentials conducted along the carotid nerve, while only a few spikes were exceptionally recorded from the glossopharyngeal branch in response to the largest doses. Carotid nerve responses to ACh were dose-dependent, the higher doses inducing transient desensitization. Application of nicotine to the petrosal ganglion also evoked dose-dependent excitatory responses in the