

Topical Application of Connexin43 Hemichannel Blocker Reduces Carotid Body-Mediated Chemoreflex Drive in Rats

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© 2018, Springer International Publishing AG, part of Springer Nature. The carotid body (CB) is the main arterial chemoreceptor involved in oxygen sensing. Upon hypoxic stimulation, CB chemoreceptor cells release neurotransmitters, which increase the frequency of action potentials in sensory nerve fibers of the carotid sinus nerve. The identity of the molecular entity responsible for oxygen sensing is still a matter of debate; however several ion channels have been shown to be involved in this process. Connexin-based ion channels are expressed in the CB; however a definitive role for these channels in mediating CB oxygen sensitivity has not been established. To address the role of these channels, we studied the effect of blockers of connexin-based ion channels on oxygen sensitivity of the CB. A connexin43 (Cx43) hemichannel blocking agent (CHBa) was applied topically to the CB and the CB-mediated hypoxic ventilatory response (FiO₂ 21, 15, 10 and 5%) was measured in adult male Sprague-D