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[\[PDF \(1816K\)\]](#) [\[References\]](#)**Comparison of effects of PKA catalytic subunit on I_h and calcium channel currents in rat dorsal root ganglion cells**You KOMAGIRI¹⁾²⁾ and Naoki KITAMURA¹⁾³⁾

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ABSTRACT

We investigated whether PKA-induced phosphorylation was involved in regulation of hyperpolarization-activated current (I_h) in rat dorsal root ganglion (DRG) cells. We examined the effect of the catalytic subunit of PKA (PKAc) on I_h and confirmed an effect of PKAc on Ca^{2+} channel currents carried by Ba^{2+} (I_{Ba}) in identical neurons as a positive control of PKA activity. After the start of recording, amplitudes of I_{Ba} gradually decreased (rundown). An intracellular application of ATP reduced the rundown of I_{Ba} and induced a depolarizing shift of I_h activation. The former was partially reversed by PKI but the latter was not affected. An intracellular application of PKAc also prevented the rundown of I_{Ba} and this effect was potentiated by okadaic acid (OA). The application of PKAc and OA in combination did not change the electrophysiological properties of I_h although a potentiating effect on I_{Ba} was observed in the same neurons. The application of 2-mM ATP in addition to PKAc and OA did not result in an additional potentiation of I_{Ba} , but shifted the activation curve of I_h positively. These results suggested that PKA-induced phosphorylation was not involved in the modulatory mechanisms of I_h in rat DRG neurons.

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