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Redox-mediated regulation of connexin proteins; focus on nitric oxide.

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Abstract

Connexins are membrane proteins that form hemichannels and gap junction channels at the plasma membrane. Through these channels connexins participate in autocrine and paracrine intercellular communication. Connexin-based channels are tightly regulated by membrane potential, phosphorylation, pH, redox potential, and divalent cations, among others, and the imbalance of this regulation have been linked to many acquired and genetic diseases. Concerning the redox potential regulation, the nitric oxide (NO) has been described as a modulator of the hemichannels and gap junction channels properties. However, how NO regulates these channels is not well understood. In this mini-review, we summarize the current knowledge about the effects of redox potential focused in NO on the trafficking, formation and functional properties of hemichannels and gap junction channels.