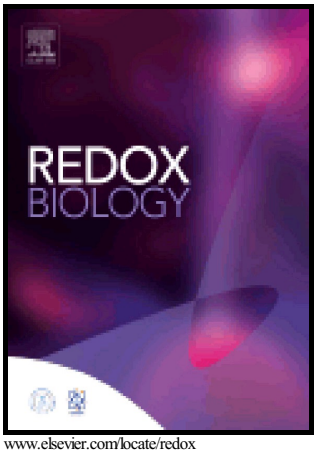

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Nrf2 expression and function, but not MT expression, is indispensable for sulforaphane-mediated protection against intermittent hypoxia-induced cardiomyopathy in mice

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Abstract

We reported previously that nuclear factor erythroid 2-related factor 2 (Nrf2) and metallothionein (MT) play critical roles in preventing intermittent hypoxia (IH)-induced cardiomyopathy. In addition, positive feedback regulation between Nrf2 and MT is required for the efficient compensative responses of the heart to IH. As an activator of Nrf2, sulforaphane (SFN) has attracted attention as a potential protective agent against cardiovascular disease. Here, we investigated whether SFN can up-regulate cardiac Nrf2 expression and function, as well as MT expression, to prevent IH-induced cardiomyopathy, and if so, whether Nrf2 and MT are indispensable for this preventive effect. Nrf2-knock-out (Nrf2-KO) or MT-KO mice and their wild-type (WT) equivalents were exposed to IH for 4 weeks with or without SFN treatment. SFN almost completely prevented IH-induced cardiomyopathy in WT mice, and this preventive