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**Volume 104, Number 4 / July 2009**

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ORIGINAL CONTRIBUTION

**Effects of the NO donor sodium nitroprusside on oxygen consumption and energetics in rabbit myocardium**

Mark Hinlich and Gerd Hasenfuss

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ORIGINAL CONTRIBUTION

**Tyrosine hydroxylase phosphorylation after naloxone-induced morphine withdrawal in the left ventricle**

Pilar Almela, Maria Victoria Milenés and Maria Luisa Laorden

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1. Click “Show Abstract” to reveal the abstract.

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**Abstract**

Our previous studies have shown that morphine withdrawal induced hyperactivity of cardiac noradrenergic pathways. The purpose of the present study was to evaluate the effects of morphine withdrawal on site-specific tyrosine hydroxylase (TH) phosphorylation in the rat left ventricle. Dependence on morphine was induced by a 7-day s.c. implantation of morphine pellets. Morphine withdrawal was precipitated on day 8 by an injection of naloxone (2 mg/kg, s.c.). TH phosphorylation was determined by quantitative blot immunolabelling using phosphorylation state-specific antibodies. Ninety min after naloxone administration to morphine-dependent rats there was an increase in phospho-Ser40-TH (139.0 ± 13%, P < 0.05) and Ser31-TH (135.5 ± 11%, P < 0.05) in the left ventricle which is associated with both an increase in total TH levels (114.4 ± 4.6%, P < 0.05, P < 0.01) and an enhancement of TH activity (51.0 ± 11 dm/min/mg protein, P < 0.001). When HA-1004 (40 nmol/day), inhibitor of cyclic AMP dependent protein kinase (PKA) was infused, concomitantly with morphine, it diminished the increase in noradrenaline (NA) turnover, total TH expression (95.76 ± 4.1%, P < 0.01) and TH phosphorylation at Ser40 (95.6 ± 11%, P < 0.01) in morphine-withdrawn rats. In addition, we showed that the ability of...
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