

ROLE OF GLUCOCORTICOID IN CARDIAC METABOLISM IN VIVO.

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Little is known about how physiological concentrations of glucocorticoid relate to cardiac metabolism in vivo. Healthy conscious dogs with catheters implanted for blood sampling and glucose infusion have been studied. Arterial glucose concentration (Ca) was not significantly correlated with the arterial-coronary sinus glucose difference, Ca-cs glucose ($r=0.23$, $n=50$). The range of blood glucose values was 3700 to 74400 $\mu\text{mol/l}$ (mean \pm sem, 13900 \pm 2200). Cortisol immunoreactivity in arterial plasma (Ia cortisol) was significantly and negatively correlated with Ca-cs glucose ($r=0.37$, $n=50$, $P<0.01$). The range of plasma cortisol values was 13 to 438 nmol/l (mean \pm sem, 93 \pm 13). A multiple regression equation to predict Ca-cs glucose from both Ca glucose and Ia cortisol as independent variables, had an F-ratio of 6.85, significant at the 1% level: Ca-cs glucose = 294 + 0.78 Ca glucose -1.52 Ia cortisol. The heart took up and released cortisol in relation to Ia cortisol ($r=0.75$, $n=50$, $P<0.001$). The range of Ia-cs cortisol was -31 to 138 nmol/l (mean \pm sem, 12 \pm 4). The Ca-cs glucose was negatively correlated with Ia-cs cortisol ($r=0.43$, $n=50$, $P<0.01$). By multiple regression analysis: Ca-cs glucose = 331 -0.2 Ia cortisol -4.3 Ia-cs cortisol (F ratio = 5.05, $P = 0.01$). Thus it may be that Ia cortisol and Ia-cs cortisol reflect different aspects of the regulation of cardiac glucose metabolism.

Volume 10

Supplement 1

August 1978

JMCDAY 10(8)

Supplement 1 (1978)

Journal of
**Molecular and
Cellular Cardiology**

*Published for the International Study Group for Research in
Cardiac Metabolism (International Society for Heart Research)*



**Abstracts for the Ninth Congress of the
International Society for Heart Research**

New Delhi, India, 28 September to 2 October, 1978

Academic Press London New York San Francisco

A Subsidiary of Harcourt Brace Jovanovich, Publishers

