

ERRATUM

Levels of Energy-Related Metabolites in Intact and Isolated Perfused-Superfused Rat Skeletal Muscles

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Summary

Adenosine 5'-triphosphate (ATP), phosphocreatine (PCr), creatine (Cr), inorganic phosphate (Pi), lactate (LAC), pyruvate (PYR) and glycogen as glucose (GLU) were determined and free adenosine 5'-diphosphate (ADP) was calculated from ATP:creatine phosphokinase (CPK) reaction in the gracilis muscle of cold-acclimated rats *in vivo*, and in completely isolated muscles under medium perfusion and superfusion *in vitro*, using the freeze-clamping method. The mean *in vivo* levels ($\mu\text{mol/g w.w.}$) were: ATP 4.8, PCr 12.0, Cr 7.8, Pi 16.1, LAC 1.6, PYR 0.09, GLU 22.9, ADP 0.62×10^{-3} . Isolation of the muscle (about 11 min of anoxia followed by perfusion in the air with a high $p\text{O}_2$ medium) decreased macroergic phosphate levels (ATP 3.0, PCr 8.3). In isolated muscles perfused with a high $p\text{O}_2$ medium (99 kPa O_2 , perfusion rate $70 \mu\text{l/min}$) and simultaneously superfused with a low $p\text{O}_2$ medium (6.2 kPa O_2 , 2.3 ml/min) at 28 °C *in vitro* the levels of metabolites were ($\mu\text{mol/g w.w.}$): ATP 3.1, PCr 8.5, Cr 5.6, Pi 9.2, LAC 2.1, PYR 0.19, GLU 6.6, ADP 0.44×10^{-3} . The mean steady oxygen uptake of the isolated muscle was $97 \text{ nmol O}_2 \times \text{min}^{-1} \times \text{g}^{-1} \text{ w.w.}$ Thus, the levels of macroergic phosphates and their derivatives are lower after isolation and perfusion of the muscle, but the creatine charge $[\text{PCr}]/([\text{PCr}]+[\text{Cr}])$ remains stable (0.61 *in vivo* versus 0.60 in the isolated muscle). This indicates that the steady-state and high energy status of the isolated perfused-superfused gracilis muscle is maintained.

Table 1
Levels of metabolites in muscles of the three experimental groups

Group	ATP	PCr	Cr	Pi	LAC	PYR	ADP $\times 10^{-3}$	GLU
Controls <i>in vivo</i>	4.8	12.0	7.8	16.1	1.6	0.09	0.62	22.9
\pm S.E.M. (n = 7)	0.33	0.77	0.33	1.4	0.11	0.03	0.06	2.1
Isolated, perfused in the air	3.0**	8.3**	6.1	12.3	2.3	0.07	0.44	26.6
\pm S.E.M. (n = 6)	0.22	0.41	0.73	1.2	0.36	0.01	0.07	4.2
Isolated, perfused and superfused	3.1**	8.5*	5.6*	9.2**	2.1	0.19	0.44	6.6**
\pm S.E.M. (n = 8)	0.22	0.99	0.70	1.4	0.71 (n=3)	0.15 (n=3)	0.07	2.9

The results are expressed as means \pm S.E.M. in $\mu\text{mol/g wet weight}$. Significant differences from the controls: * = $p < 0.05$; ** = $p < 0.01$

Inorganic phosphate (Pi) values were erroneously published as 10 times lower !