

TABLE VI

*Estimated maximal velocity of ADP-utilizing enzymes, assuming calculated free ADP values for cytoplasm*

All  $K_m$  values are for rabbit muscle enzymes except for the translocase which is for rat liver.  $V_{max}$  values are given as micromoles of substrate transformed/min/g fresh weight under optimal conditions.  $V_{max}$  values from liver are at 37°C. The references for the kinetic constants are in parentheses. Using these constants, the cellular reaction rates,  $v$ , were calculated from the equation

$$v = V_{max} \left( \frac{[\Sigma ADP]}{[\Sigma ADP] + K_m(ADP)} \frac{(X)}{[X] + K_m(x)} \right)$$

where  $X$  = 1,3-diphosphoglycerate for 3-phosphoglycerate kinase, P-enolpyruvate for pyruvate kinase and creatine-P for creatine kinase. The calculated free cytosolic  $[\Sigma ADP]$  from Table V was used in all cases.  $[\Sigma Creatine-P]$  was from Table III. The concentrations of 1,3-diphosphoglycerate and P-enolpyruvate were calculated as described under "Materials and Methods." The values (micromoles/g of cell water) obtained were:  $[\Sigma P-enolpyruvate] = 0.008$  (brain), 0.033 (erythrocyte), 0.173 (liver), 0.017 (skeletal muscle) and  $[\Sigma 1,3-diphosphoglycerate] = 0.0008$  (brain), 0.0005 (erythrocyte), 0.0094 (liver), 0.0029 (skeletal muscle).

	Pyruvate kinase	3-Phosphoglycerate kinase	Creatine kinase	Translocase
$K_m$ value for ADP	300 $\mu M$ (74) <sup>a</sup>	350 $\mu M$ (75) <sup>b</sup>	800 $\mu M$ (76) <sup>c</sup>	1-4 $\mu M$ (77)
$K_m$ value of second substrate	70 $\mu M$ (74) <sup>a</sup>	2.2 $\mu M$ (75) <sup>b</sup>	5000 $\mu M$ (76) <sup>c</sup>	
Maximal enzyme activity (78)		<i><math>\mu mol/min/g</math> tissue)</i>		
Muscle	387	169	1400 <sup>d</sup>	
Brain	164	610	600 <sup>d</sup>	
Liver	50	150		96 (77) <sup>e</sup>
Erythrocyte	4.6	25.6		
Tissue velocity at calculated cytosolic [ADP]				
Muscle	8.3	9.2	52.1	
Brain	1.7	13.6	11.2	
Liver	5.0	14.9		89
Erythrocyte	.7	2.0		

<sup>a</sup> pH 7.4, 30°C.

<sup>b</sup> pH 7, 37°C.

<sup>c</sup> pH 7, 30°C.

<sup>d</sup> pH 8, 37°C (personal communication, Dr. J. V. Passonneau).

<sup>e</sup> Assumes 80 mg of mitochondrial protein/g fresh weight.