

Table 1 Rates of different energy-consuming reactions in Con A-stimulated thymocytes and their control over system variables

Rates of specific ATP consumers were measured as the decrease in respiration rate caused by complete inhibition of the process, assuming that such inhibition did not alter the rates of other processes (justified in the text). J_{ATP} is the rate of ATP synthesis and consumption in units of oxygen consumption rate; equal to 3.3 nmol of O_2 /min per 5×10^7 cells. C^{ATP} (or J_s , J_L , P/O, $\Delta\psi$) are the flux control coefficients of different blocks of reactions over J_{ATP} (or substrate oxidation rate, proton leak rate, effective P/O ratio or $\Delta\psi$), calculated as described in the text. The fraction of J_{ATP} that is used by each process is equal to the fraction of the total control by the ATP consumers over the rate of ATP production exerted by that process.

Process driven by respiration	Process rate		Fraction of J_{ATP}	C^{ATP}	C^L	C^I	$C^{P/O}$	$C^{\Delta\psi}$
	nmol of O_2 /min per 5×10^7 cells \pm S.E.M.	% of total respiration rate						
Protein synthesis	1.11 \pm 0.12 ($n = 9$)	20.5	0.34	0.30	0.17	-0.03	0.13	-0.02
Na ⁺ /K ⁺ -ATPase	0.52 \pm 0.07 ($n = 9$)	9.6	0.16	0.14	0.08	-0.01	0.06	-0.01
Ca ²⁺ -ATPase	0.55 \pm 0.12 ($n = 6$)	10.2	0.17	0.15	0.08	-0.01	0.06	-0.01
RNA/DNA synthesis	0.81 \pm 0.18 ($n = 5$)	15.0	0.25	0.21	0.12	-0.02	0.09	-0.01
Unidentified ATP consumers*	0.31	5.7	0.09	0.08	0.05	-0.01	0.04	-0.00
Proton leak†	2.11 \pm 0.20	39.0						
Sum	5.41 \pm 0.18 ($n = 16$)	100	1.01	0.88	0.50	-0.08	0.38	-0.05

* Calculated as the difference between total respiration rate and the sum of the identified reactions.

† Scaled from data obtained under identical conditions in [9].