

TABLE 2. *Contribution of major oxygen-consuming processes to oxygen consumption rate of rat tissues in standard state*

Tissue	Protein Synthesis	Na ⁺ -K ⁺ -ATPase	Ca ²⁺ -ATPase	Other Major Contributors
Liver	24	5-10	5	Gluconeogenesis (15-40%) and urea synthesis (12%), substrate cycling (26%), oligonucleotide synthesis (5%), proton leak (26%), nonmitochondrial (20%)
Gastrointestinal tract	74	60		
Kidney	6	40-70		Gluconeogenesis (5%)
Heart	3	1-5	15-30	Actinomyosin ATPase (40-50%), proton leak (15% max)
Brain	5	50-60	Significant	
Skeletal muscle	17	5-10	5	Proton leak (50%), nonmitochondrial (14%)

Data for protein synthesis are calculated using data for whole body protein turnover and fractional contribution of each tissue to this figure (210) and assuming that the average molecular weight of a peptide bond is 110, ATP peptide bond stoichiometry is 4, and ATP/O is 2.5. Data for Na⁺-K⁺-ATPase and Ca²⁺-ATPase are from Clausen et al. (53). Data for substrate cycling are from Rabkin and Blum (169). Data for glucose and urea synthesis are from Kusaka and Ui (132), Berry et al. (14), and Haussinger et al. (100). Estimates of contribution of actinomyosin ATPase activity to ATP turnover are from data of Challoner (48), Suga (200), and Clausen et al. (53). Note that, where it was necessary to assume a value for P/O to calculate data presented here, a figure of 2.5 has been used. Data for rat tissue oxygen consumption rates in the resting state are taken from Table 1. Note also that because data used to compile this table are taken from different sources; the sum of energy requiring processes in some organs may exceed 100%.