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| Table 2. *Parameter values for the adenine nucleotide-creatine-phosphate module and the ATP synthesis and hydrolysis modules* | | | |
| Name | Description | Value and Unit | Reference No. |
| *Rabbit Parameter Set* | | | |
| MiCK (parameters mitochondrial creatine kinase enzyme) | maximum velocity in the forward direction (PCr production)  maximum velocity in the backward direction (ATP production)  binary dissociation constant ATP  binary dissociation constant Cr  binary dissociation constant ADP  binary dissociation constant PCr  ternary dissociation constant Cr  ternary dissociation constant PCr  ternary dissociation constant ADP  ternary dissociation constant Cr from dead end complex | / |  |
| MMCK (parameters muscle creatine kinase enzyme in the cytosol) | maximum velocity in the forward direction (PCr  production)  maximum velocity in the backward direction (ATP  production)  binary dissociation constant ATP  binary dissociation constant Cr  binary dissociation constant ADP  binary dissociation constant PCr  ternary dissociation constant Cr  ternary dissociation constant PCr  ternary dissociation constant ADP  ternary dissociation constant Cr for dead end complex | / |  |
| Diffusional Conductance Cytosolic Compartment | diffusional conductance ATP  diffusional conductance ADP  diffusional conductance PCr  diffusional conductance Cr  diffusional conductance |  | (11) |
| Outer Membrane Permeabilities with Restricted  Adenine Nucleotide Transfer | membrane conductance ATP  membrane conductance ADP  membrane conductance PCr  membrane conductance Cr  membrane conductance |  | optimized  (41) |
| Fractional volumes | cytosolic compartment volume (0.461 ml/g ww) as fraction of total intracellular water volume (0.615 ml/g ww)  intermembrane space volume (0.038 ml/g ww) as fraction of total intracellular water volume | 3/4  1/16 |  |
| Total metabolite contents | total adenine nucleotide content  total creatine content  total content phosphate groups |  | (12,13) |
| ATP synthesis | maximum ATP synthesis velocity  apparent K M mitochondria for ADP  apparent K M mitochondria for | /s | (19,25)  (19,23) |
| ATP hydrolysis | ATP hydrolysis at 135 beats/min averaged over cardiac cycle  ATP hydrolysis at 220 beats/min averaged over  cardiac cycle | /s  /s | (17,18)  (17,18) |
| *Rat Heart Parameter Set* | | | |
| Same as rabbit heart parameter set, except: |  |  |  |
| Temperature = 37 °C. To convert experimentally measured rates, determined at T = 25°C, to T = 37°C the temperature coefﬁcient = 2 was used. The of MM-CK, Mi-CK, and of ATP synthesis, total metabolite contents, and ATP hydrolysis levels for basis and test conditions were measured in the experimental model simulated here. aVb/Vf = 4.199 (2); b Mi-CK activity: 1.15 IU / mg mito prot at T = 25 °C, measured in our laboratory in the experimental model which is simulated here (17, 18). c MM-CK activity: 4.54 IU total CK activity, corrected for mitochondrial CK activity, measured in our laboratory in the experimental model which is simulated here (18). d Corresponds to 68 = mol/(g dw = min) of maximal O2 consumption at T = 37 °C, determined from isolated rabbit heart mitochondria in our laboratory (12). e total intracellular water volume and distribution in heart tissue, see (1). Note that the mitochondrial matrix is not part of the ACP module. | | | |