

Brault JJ, RL Terjung. Purine salvage to adenine nucleotides in different skeletal muscle fiber types. *J Appl Physiol* 2001;91:231-238.

Rates of purine salvage of adenine and hypoxanthine into the adenine nucleotide (AdN) pool of the different skeletal muscle phenotype sections of the rat were measured using an isolated perfused hindlimb preparation. Tissue adenine and hypoxanthine concentrations and specific activities were controlled over a broad range of purine concentrations, ranging from 3 to 100 times normal, by employing an isolated rat hindlimb preparation perfused at a high flow rate. Incorporation of [(3)H]adenine or [(3)H]hypoxanthine into the AdN pool was not meaningfully influenced by tissue purine concentration over the range evaluated (approximately 0.10-1.6 micromol/g). Purine salvage rates were greater ($P < 0.05$) for adenine than for hypoxanthine (35-55 and 20-30 nmol \times h⁽⁻¹⁾ \times g⁽⁻¹⁾, respectively) and moderately different ($P < 0.05$) among fiber types. The low-oxidative fast-twitch white muscle section exhibited relatively low rates of purine salvage that were approximately 65% of rates in the high-oxidative fast-twitch red section of the gastrocnemius. The soleus muscle, characterized by slow-twitch red fibers, exhibited a high rate of adenine salvage but a low rate of hypoxanthine salvage. Addition of ribose to the perfusion medium increased salvage of adenine (up to 3- to 6-fold, $P < 0.001$) and hypoxanthine (up to 6- to 8-fold, $P < 0.001$), depending on fiber type, over a range of concentrations up to 10 mM. This is consistent with tissue 5-phosphoribosyl-1-pyrophosphate being rate limiting for purine salvage. Purine salvage is favored over de novo synthesis, inasmuch as delivery of adenine to the muscle decreased ($P < 0.005$) de novo synthesis of AdN. Providing ribose did not alter this preference of purine salvage pathway over de novo synthesis of AdN. In the absence of ribose supplementation, purine salvage rates are relatively low, especially compared with the AdN pool size in skeletal muscle.