Creatine Prevents Energy Metabolism Dysfunction Caused by Hyperhomocysteinemia


INTRODUCTION: In the present study we investigate the effect of hyperhomocysteinemia on the cell mitochondrion viability and parameters of energy metabolism. Creatine was also tested. MATERIALS AND METHODS: Wistar rats received daily injection of homocysteine (0.3-0.6 µmol/g body weight), and/or creatine (50 mg/Kg body weight) from 6th to the 28th day of age. Animals were decapitated 12 hours after the last injection and gastrocnemius skeletal muscle was removed. RESULTS AND DISCUSSION: Homocysteine decreased the cell viability of the mitochondrion and the activities of pyruvate kinase and creatine kinase. Succinate dehydrogenase was increased. Creatine plus homocysteine prevented or causes a synergistic effect on the parameters elucidated. CONCLUSION: These findings demonstrated that the homocysteine affects the energy metabolism. Although creatine prevents some alterations caused by homocysteine it should be used with caution mainly in normal individuals since it could change the homeostasis of normal physiological functions.

Keywords: hyperhomocysteinemia, energy metabolism, skeletal muscle, creatine

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