

ABSTRACT

THESIS: Effect of Dietary Supplementation with Glutathione, Glutathione Ester, and N-Acetylcysteine on Reduced Glutathione (GSH) Levels in Mitochondria from Rat Kidney Cortex and Medulla

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The present study determined whether dietary supplementation with reduced glutathione (GSH), glutathione ester (GSHE) or N-acetylcysteine (NAC) increased the mitochondrial level of GSH, the major antioxidant inside cells, in rat kidney cortex and medulla. Nine month-old female Lewis rats were given daily intraperitoneal injections of isotonic saline (n=6), or saline containing GSH (250mg or 0.81mmol/Kg of body wt; n=7), GSHE (12mg or 0.03mmol/Kg; n=8), or NAC (200mg or 1.22mmol/Kg; n=8) for four weeks. At the end of the injection period, the rats were anesthetized and the kidneys removed. The kidneys were separated into cortical and medullary sections, weighed, and homogenized. The sections were separated into cytosolic and mitochondrial fractions by differential centrifugation. The GSH levels were determined by a colorimetric assay. Cortical and medullary mitochondrial GSH levels were significantly increased by all three supplements. Cytosolic GSH levels were also significantly increased in both cortical and medullary sections. Thus, dietary supplementation can significantly increase the mitochondrial pool of GSH in the rat kidney.