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Bioavailability of dietary glutathione: effect on plasma concentration.

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Abstract

Plasma glutathione (GSH) concentration in rats increased from approximately 15 to 30 microM after administration of GSH either as a liquid bolus (30 mumol) or mixed (2.5-50 mg/g) in AIN-76 semisynthetic diet. GSH concentration was maximal at 90-120 min after GSH administration and remained high for over 3 h. Administration of the amino acid precursors of GSH had little or no effect on plasma GSH values, indicating that GSH catabolism and resynthesis do not account for the increased GSH concentration seen. Inhibition of GSH synthesis and degradation by L-buthionine-[S,R]-sulfoximine and acivicin showed that the increased plasma GSH came mostly from absorption of intact GSH instead of from its metabolism. Plasma protein-bound GSH also increased after GSH administration, with a time course similar to that observed for free plasma GSH. Thus dietary GSH can be absorbed intact and results in a substantial increase in blood plasma GSH. This indicates that oral supplementation may be useful to enhance tissue availability of GSH.

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