The systemic availability of oral glutathione.

European Journal of Clinical Pharmacology. 1992;43(6):667-9.

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When the plasma glutathione concentration is low, such as in patients with HIV infection, alcoholics, and patients with cirrhosis, increasing the availability of circulating glutathione by oral administration might be of therapeutic benefit. To assess the feasibility of supplementing oral glutathione we have determined the systemic availability of glutathione in 7 healthy volunteers. The basal concentrations of glutathione, cysteine, and glutamate in plasma were 6.2, 8.3, and 54 mumol.l-1 respectively. During the 270 min after the administration of glutathione in a dose of 0.15 mmol.kg-1 the concentrations of glutathione, cysteine, and glutamate in plasma did not increase significantly, suggesting that the systemic availability of glutathione is negligible in man. **Because of hydrolysis of glutathione by intestinal and hepatic gamma-glutamyltransferase, dietary glutathione is not a major determinant of circulating glutathione, and it is not possible to increase circulating glutathione to a clinically beneficial extent by the oral administration of a single dose of 3 g of glutathione.**

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Dietary glutathione intake in humans and the relationship between intake and plasma total glutathione level.

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Glutathione may function as an anticarcinogen by acting as an antioxidant or by binding with cellular mutagens. Orally administered glutathione increases plasma glutathione levels, and plasma glutathione is also synthesized in the liver. To investigate the associations between glutathione intake and plasma glutathione level, we compared dietary intake estimates from food frequency questionnaire data and measured concentrations of plasma total glutathione and other serum antioxidants in 69 white men and women. Daily glutathione intake ranged from 13.0 to 109.9 mg (mean 34.8 mg). Fruits and vegetables were found to contribute over 50% of usual dietary glutathione intake, whereas meats contributed less than 25%. **Small**

negative correlations were observed between dietary and plasma glutathione and, although they were usually not statistically significant, they were generally consistent by different time periods of dietary intake assessment. Adjustment for sex, age, caloric intake, and dietary intake of the sulfur-containing amino acids methionine and cystine did not alter the observed associations. The correlations appeared to be modified, however, by serum vitamin C concentration, with little or no association between dietary and plasma glutathione among those with lower levels of serum vitamin C and stronger negative correlations among those with higher serum vitamin C levels. **These findings indicate that factors regulating plasma glutathione concentration are complex and not simply related to dietary glutathione intake** or supply of precursor amino acids.

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