

PubMed Results

Item 1 of 1

1. Chem Res Toxicol. 2004 Dec;17(12):1562-7.

A new role for glutathione: protection of vitamin B12 from depletion by xenobiotics.

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Abstract

NADPH in microsomes reduces the hydroxocob(III)alamin form of vitamin B12 to cob(II)alamin and the supernucleophilic cob(I)alamin, which are both highly reactive toward xenobiotic epoxides formed by mammalian metabolism of dienes such as the industrially important chemicals chloroprene and 1,3-butadiene. With styrene, the metabolically formed styrene oxide is reactive toward cob(I)alamin but not cob(II)alamin. Such reactions in humans could lead to vitamin B12 deficiency, which is implicated in pernicious anemia, cancer, and degenerative diseases. However, glutathione inhibits the reduction of hydroxocob(III)alamin by formation of the 1:1 complex glutathionylcobalamin. This blocks reactions of the cobalamins with metabolically formed epoxides. The interaction between glutathione and vitamin B12 could protect against diseases related to vitamin B12 depletion.

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