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Expression analysis of mammalian selenocysteine lyase

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Abstract:
Selenium (Se) is an essential trace element of mammals and plays important roles in the form of selenocysteine residues in selenoproteins. Selenocysteine lyase (SCL) specifically catalyzes the decomposition of L-selenocysteine into Se and L-alanine and is proposed to function as a Se delivery protein to selenophosphate synthetase in selenoprotein biosynthesis. However, the physiological role of SCL has not been established. In this study, the expression levels of SCL in various tissues of Se-deficient/supplemented mice were studied. We also examined effect of oxidative stress or excess sodium selenite on the expression of SCL by western blot analysis. Expression levels of SCL were not significantly changed by Se status in many tissues. However, the levels of SCL in the stomach of 7 out of 8 mice fed a Se-supplemented diet were markedly lower than those of mice fed a Se-deficient diet. By the administration of 1 mg/kg sodium selenite, the expression levels of SCL were elevated in stomach of the mice fed a Se-supplemented diet. This is the first report demonstrating the possible existence of a Se-dependent regulation system for SCL.

Key words: Selenium, Deficiency, Mouse, Selenocysteine lyase, Expression, Western blot

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