

GS2-3 Involvement of pyruvate in methylmercury toxicity

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Methylmercury is a widespread environmental pollutant, having severe neurotoxic effects. Recently, prenatal exposure to methylmercury from maternal seafood diets during pregnancy is concerned to cause severe damage to the central nervous system of fetus.

We have demonstrated that methylmercury toxicity was enhanced by pyruvate, and the yeast cells lacking mitochondrial pyruvate transporter (Yil006w) conferred resistance to methylmercury. Also, we observed increase in pyruvate level in mitochondrial matrix and decrease in cytosolic pyruvate level by treatment with methylmercury. However, methylmercury hardly affected the pyruvate level in mitochondrial matrix of the yeast cells lacking Yil006w. Next, we examined the effect of intracellular level of Yil006w on the methylmercury toxicity. The protein level of Yil006w was increased by the treatment with methylmercury, and yeast cells overexpressing Yil006w conferred hypersensitivity to methylmercury. These results suggest that the increased level of Yil006w by methylmercury might promote the pyruvate inflow into mitochondrial matrix, and then the methylmercury toxicity might be enhanced.