

## Oxalate Synthesis from Hydroxypyruvate in Vitamin-B6-Deficient Rats

**Yaovalak TEERAJETGUL**

NRCT - 10422

Associate Professor,  
Khon Kaen University, Division of Clinical Chemistry,  
Faculty of Associated Medical Sciences



Japanese Advisor : Yoshihide OGAWA  
Professor, University of the Ryukyus

We studied the effects of an intravenous hydroxypyruvate load on endogenous oxalogenesis in rats receiving a standard diet or a vitamin-B6-deficient diet. Twelve male Wistar rats were randomized to two groups and were fed either a standard diet or a vitamin-B6-deficient diet for 3 weeks. Then the animals received an intravenous infusion of 100 mg/ml (960.6  $\mu$ mol/ml) of hydroxypyruvate slowly over 10 min. Urine samples were collected just before hydroxypyruvate infusion and at hourly intervals until 5 h afterward. Urinary oxalate, glycolate, and citrate levels were measured by capillary electrophoresis. Hourly urinary oxalate excretion peaked within 2 h, while urinary glycolate excretion peaked at 1 h, after the hydroxypyruvate load in both control and vitamin-B6-deficient rats. Both urinary oxalate and glycolate excretion were higher in vitamin-B6-deficient rats than in control rats. Infusion of hydroxypyruvate increased the 5-h urinary oxalate and glycolate excretion to 0.68% (6.56  $\mu$ mol) and 0.53% (5.10  $\mu$ mol) of the administered dose (mol/mol), respectively, in the control rats, while oxalate and glycolate excretion, respectively, increased to 2.43% (23.36  $\mu$ mol) and 0.79% (7.59  $\mu$ mol) of the dose in the vitamin-B6-deficient rats. Urinary citrate excretion was significantly lower at baseline and all other times in the vitamin-B6-deficient rats than in the control rats. In conclusion, a hydroxypyruvate load increased endogenous oxalate synthesis in control rats, and its synthesis was even greater in vitamin-B6-deficient rats. Vitamin B6 deficiency also resulted in significant hypocitraturia.

