

EFFECTS OF THIAMINE DEFICIENCY ON THE METABOLISM
AND TOXICITY OF PARACETAMOL

*Auratai Aramphongphan[†], M. Ruchirawat[†], W. Churnsupanrat[†]
and V. Tanphaichitr^{*}*

[†]*Department of Pharmacology, Faculty of Science and ^{*}Department of
Medicine, Faculty of Medicine, Ramathibodi Hospital, Mahidol University.*

Effect of thiamine deficiency on the metabolism of paracetamol was studied in male and female rats. Deficiency of thiamine enhanced the rate of disappearance of the drug from the plasma and the liver. An increase in the level of water soluble metabolites, characterized as glucuronide and sulfate conjugates was also observed.

The effect of thiamine deficiency could be overcome by supplementation with thiamine by intraperitoneal injection. A single large dose of thiamine (650 µg) could decrease the rate to the control level within 24 hours. However, a series of 5 low doses (260 µg/dose/day) was required to produce the same effect. The level of covalently bound metabolites of paracetamol was 30% higher in thiamine deficient rats. Serum transaminase enzyme levels, (SGOT and SGPT), indicated that thiamine deficient rats were more susceptible to hepatotoxic action of paracetamol. These finding suggested that thiamine deficiency increased the rate of metabolism as well as acute toxicity of paracetamol.