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EFFECTS OF VITAMIN B₆ ON CCl₄ TOXICITIES IN RATS

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SUMMARY

Treatment with high doses of vitamin B₆ to the adult male rats (100-300 mg/kg, IP, once daily for 3 weeks) caused a dose-dependent reduction in body weight gain without affecting liver and kidney functions as measured by SGPT activity and blood urea nitrogen (BUN) level. Further, these treatments did not affect hepatic aminopyrine N-demethylase and aniline hydroxylase activities. However, the administration of vitamin B₆ intraperitoneally in the dose of 100 mg/kg, once daily for 3 weeks, increased both hepatotoxicity and mortality rate induced by carbon tetrachloride (CCl₄) observed within 7 days after the hepatotoxin challenge. Enhancement of CCl₄ toxicity was not due to an increase in lipid peroxidation or hepatic enzyme induction since vitamin B₆ neither promoted lipid peroxidation in vitro in the presence of CCl₄ nor stimulated hepatic drug-metabolizing enzymes. On the contrary, histologic examination of the rat hepatocytes showed that vitamin B₆ pretreatment seemed to prevent morphological alteration and necrosis during 24 to 48 hours after CCl₄ administration. However, at 72 hours morphological alterations of the hepatocytes from vitamin B₆-pretreated rats were not different from that of the control given CCl₄ alone. It was concluded that high doses of vitamin B₆ pretreatment enhanced the toxicity of CCl₄. Morphologic examination or measurement of biochemical parameters alone was not adequate to interpret the toxicities of the chemical, since mortality and hepatotoxicity may be caused by different mechanisms. The mechanism responsible for the increase in mortality rate and hepatotoxicity of CCl₄ after vitamin B₆ pretreatment is still unknown. Future investigation is therefore necessary to clarify the cause and effect of this vitamin in enhancing the toxicity of this hepatotoxin.