The Effect of CaNa₂-EDTA on Zinc, Carbohydrate Metabolism and Glutamic Oxalate Pyruvic Aminotransferases (GOTt, GPT) and Alkaline Phosphatase Activities in Experimental Diabetes

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To investigate the effect of CaNa₂-EDTA and experimental diabetes (IDDM) on zinc and carbohydrate metabolism and the activities of GOT, GPT and alkaline phosphates. Forty male weaning normal albino (Wistar) rats of 8 weeks of age were fed with a basal diet. Twenty rats (n=20) were then intraperitoneally injected with alloxan to induce diabetes. Then after one week ten rats from each group (n=20) were administrated intraperitoneally with CaNa₂-EDTA for further three weeks. Body weight gain and food intake were recorded regularly. On day 21 after an over night fasting, animals were killed and blood glucose, serum zinc, femur and pancreatic zinc concentrations, liver glycogen contents, serum glutamic oxalic transaminase (GOT), serum glutamic pyruvic transaminase (GPT) and serum alkaline phosphatase were determined. Diabetic rats given CaNa₂-EDTA or not had a low body weight gain, high total food intake (hyperphagia), low liver glycogen contents and low serum and pancreatic zinc concentrations compared to normal ones. The administration of CaNa₂-EDTA significantly altered the body weight gain, food intake and serum zinc concentration of either diabetic or non-diabetic animals. Both diabetic and non-diabetic rats given CaNa₂-EDTA had higher blood glucose than their control counterparts. Liver glycogen was also found to be higher in CaNa₂-EDTA non-diabetic rats than their controls. In alloxan diabetes, serum GOT and GPT were significantly increased compared to normal rats, while the level of serum alkaline phosphatase was decreased. The administration of CaNa₂-EDTA led to increasing of GOT and GPT, and decreasing serum alkaline phosphatase. To conclude, the present study demonstrates that CaNa₂-EDTA had an effect on body weight gain, glucose utilization and serum zinc. In addition CaNa₂-EDTA has affected the activities of GOT, GPT and alkaline phosphatase. Therefore it was appeared that CaNa₂-EDTA resulted in the development of severe diabetes.