

Abstract

A Using streptozotocin-induced diabetic rats, we examined the effects of zinc supplementation and insulin treatment on the metabolic availability of vitamin A. All diabetic animals exhibited an elevated plasma glucose (>18 mmol/liter) level within 48 h of intravenous streptozotocin injection. The untreated diabetic rats exhibited a reduction in body weight gain, with a 50% increase in daily food intake. In diabetic animals treated with insulin for 4 weeks, the plasma glucose, body weight gain, and daily food intake were comparable to those of the non-diabetic controls. The plasma concentration of vitamin A was significantly reduced in the diabetic animals, whereas the hepatic content of vitamin A in them was significantly elevated. Treatment with implantable insulin resulted in both plasma and liver concentrations of vitamin A returning to the control non-diabetic levels. Dietary zinc supplementation (120 µg/g diet for 4 weeks) failed to improve the plasma concentration of vitamin A. These results suggest that the impaired metabolic availability of vitamin A in the presence of diabetes is caused by insulin deficiency.