

Abstract

Decreased plasma concentrations of vitamin A (retinol) and retinol-binding protein have been previously identified in human subjects with type I diabetes mellitus. The present study was undertaken to investigate the effects of streptozotocin-induced diabetes in rats of three different strains including Wistar Furth, Sprague Dawley and Wistar, on plasma and liver concentrations of vitamin A. The diabetic animals gained less weight than nondiabetic controls even though they ate 50% more food. The hepatic vitamin A concentration was increased at three weeks after the onset of diabetes in all three strains of rats but the magnitude of increase was greater in Wistar than either Wistar Furth or Sprague Dawley rats. This increased storage of vitamin A in diabetic animals most likely is due to increased food intake. The plasma concentrations of vitamin A, on the other hand, remained unaffected in Wistar Furth and decreased moderately ($P < 0.02$) in Sprague Dawley but severely ($P < 0.0001$) in Wistar rats. The fact that the plasma vitamin A levels in diabetic Wistar and Sprague Dawley rats were markedly reduced despite their increased hepatic store suggest an impairment in the transport of vitamin A from the liver. The circulatory levels of vitamin A in Wistar rats are more sensitive to the diabetic state, which is in agreement with those observations seen in diabetic patients. Because of this similarity, it is reasonable to suggest that Wistar should be the choice of rat strain for future experimental studies involving vitamin A and diabetes relationships.