

Abstract

The prevalence of obesity is growing in the United States and worldwide. In this thesis the effects of the sugar fructose on weight gain and obesity are explored. The transport and uptake of fructose is based on two different systems, one that is related to insulin, and another that works in an insulin-insensitive manner. The role of the different glucose transport proteins, especially that of GLUT 5 in fructose uptake, are considered.

The hormones insulin and leptin could contribute to weight gain as they both act in the central nervous system in the regulation of eating behaviour and energy homeostasis. Fructose consumption induces dyslipidemia, insulin resistance, visceral adiposity and hypertension, which are all common features of the metabolic syndrome. Different markers of altered lipid metabolism due to fructose consumption have been under investigation, the main focus lying on TG, apoB, and LDLs. Fructose has also been shown to alter de novo lipogenesis. All these fructose-induced changes are associated with weight gain and obesity.