

Abstract

Annu Rev Nutr. 2008;28:273-93.

Methionine metabolism and liver disease.

Mato JM, Martínez-Chantar ML, Lu SC.

CIC bioGUNE, Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (ciberhed), Technology Park of Bizkaia, 48160 Derio, Bizkaia, Spain.

BACKGROUND: In the early 1930s, Banting and Best, the discoverers of insulin, found that choline could prevent the development of fatty liver disease (steatosis) in pancreatectomized dogs treated with insulin. Later work indicated that in rats and mice, diets deficient in labile methyl groups (choline, methionine, betaine, folate) produced fatty liver and that long-term administration of diets deficient in choline and methionine also caused hepatocellular carcinoma.

CONCLUSION: These experiments not only linked steatosis and diabetes but also provided evidence, for the first time, of the importance of labile methyl group balance to maintain normal liver function. This conclusion is now amply supported by the observation of mice devoid of key enzymes of methionine and folate metabolism and in patients with severe deficiencies in these enzymes. Moreover, treatments with various methionine metabolites in experimental animal models of liver disease show hepatoprotective properties.

PMID: 18331185

