



Elizabeth Jeffery
University of Illinois, USA

Controlling obesity-derived hepatic lipidosis and carcinogenesis through dietary broccoli

Diets rich in fat and sugar, often termed 'Western' diets, have become popular worldwide. Unfortunately, such diets result in an increase in body fat accumulation and development of nonalcoholic fatty liver disease (NAFLD), with the potential to lead to hepatocellular carcinoma (HCC), a cancer with very poor outcome. Brassica vegetable consumption, particularly broccoli consumption, has grown significantly in popularity within the United States and many other parts of the world. Studies report protection against many different cancers by dietary broccoli. However, liver cancer and even liver health in obesity has not been evaluated before our present study. We hypothesized that broccoli slows or prevents both NAFLD and HCC, in a model of mice fed a Western diet and treated with the hepatic carcinogen diethylnitrosamine (DEN). Male B6C3F1 mice received a powdered, control diet or a diet containing 19% lard and 31% sucrose, +/- 10% freeze-dried broccoli, wt:wt,

with weekly DEN, 45mg/kg i.e. for 6 weeks. Mice were terminated 6 months later, at 9 months of age. Broccolifed mice had lower hepatic triglycerides ($P < 0.001$) and NAFLD scores ($P < 0.0001$), associated with changes in several biomarkers supporting a correction in handling hepatic lipid metabolism. Hepatic neoplastic initiation and progression were both slowed. These findings suggest the need for a clinical study to evaluate the impact of broccoli and/or other brassica vegetables on liver health in general and hepatic handling of lipids in particular.

Biography

Elizabeth Jeffery joined the University of Illinois in 1983 and has joint appointments in the Department of Food Science and Human Nutrition, Pharmacology (College of Medicine) and the Interdisciplinary Division of Nutritional Sciences. She performs research in the area of diet, bioavailability and disease prevention, with a focus on cancer prevention using whole foods, including broccoli. She has served as Program Director for a multi-State research program on bioactive food components, on committees for the National Academy of Science focused on safety and efficacy of dietary supplements. She has a PhD in Biochemistry from the University of London, England.

ejeffery@illinois.edu