Preventing Feline Hepatic Lipidosis

Twenty-four adult cats were fed weight-gain and then weight-loss diets designed to limit n-3 long-chain polyunsaturated fatty acids (LPUFAs) and predispose the cats to hepatic lipidosis, providing a model for testing the effects of carnitine and taurine for possible amelioration of hepatic lipidosis. Cats gained at least 30% body weight and were then assigned to 1 of 4 weight-reduction diets (6 cats each to control diet, control plus carnitine, control plus taurine, and control plus carnitine and taurine) for 7 to 10 weeks.

Hepatic lipids accumulated significantly as planned but were not altered by carnitine or taurine with weight loss. Carnitine significantly increased weight loss but did not alter fat-to-lean body mass. Taurine did not significantly affect any variables. Mitochondrial numbers decreased during weight gain and weight loss but were not affected by treatment. Carnitine improved fatty acid oxidation and glucose utilization but did not correct hepatic lipidosis. The primary mechanism leading to hepatic lipidosis appears to be decreased fatty acid oxidation, but carnitine does not ameliorate this disorder in cats fed a diet low in n-3 LPUFAs.

COMMENTARY: This study demonstrates the importance of n-3 fatty acids in protecting cats against hepatic lipidosis. In another study by the same group, cats fed a complete, balanced, energy-dense diet containing sufficient amounts of n-3 LPUFAs during weight gain had minimal lipid accumulation in the liver. — Colin F. Burrows, BVetMed, PhD, MRCVS, Diplomate ACVIM