

Public Abstract

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Graduation Term:FS 2008

Department:Veterinary Medicine and Surgery

Degree:MS

Title:Feeding studies of dietary diacylglycerol oil in normal and lipoprotein lipase-deficient cats

Obesity is a significant problem that adversely affects the health of millions of people. Research into the treatment of obesity and related disorders includes the development of modified foods that may yield health benefits. One such food, diacylglycerol oil, was developed in Japan and is now available commercially in the U.S. and other countries. Diacylglycerol (DAG) oil is derived from common vegetable oils and can be used in cooking and baking much like other household oils. Because of its modified chemical structure, DAG oil is metabolized differently than vegetable oils and has been shown to reduce body weight and fat mass in animal and human studies. DAG oil also lowers serum triglyceride levels, which can be elevated in cases of obesity, diabetes, and other diseases. Elevated triglycerides can lead to an increased risk of heart disease and related disorders. Therefore, substituting DAG oil for other oils and fats in a typical diet may result in weight loss, reduced body fat, and lower serum triglyceride levels.

While DAG oil has been studied in humans and various animals, there are no reports of its use in cats. To test the hypothesis that DAG oil can be incorporated into feline diets and result in reduced serum triglycerides, two feeding studies were performed. The first trial included 8 healthy cats that were offered a commercial diet with added DAG oil or an experimental control vegetable oil for 14 days. The amount of each diet eaten was measured and general health was monitored for any negative effects. All cats accepted the DAG-containing diet, and no health problems were noted. A second trial was conducted using 11 cats with a genetic abnormality that causes lipoprotein lipase deficiency, a condition resulting in very high serum triglyceride levels. A similar disorder occurs in one in one million humans. Diets containing either DAG or a vegetable oil with a similar fatty acid content were fed separately for 8 days, then the alternate diet was fed for 8 more days. Body weights, amounts of food eaten, and serum triglycerides were measured. The results showed no differences in triglyceride levels or other observations between the two diets. Therefore, in this feline model of lipoprotein lipase deficiency, DAG oil had no beneficial effect in reducing serum triglycerides. However, DAG oil was found to be safe and well-accepted in cats, and therefore may be used in future feline studies.