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Composition of Diets Investigating the Significance of Bioactive Fatty Acids in Whole Milk on  
Insulin Sensitivity, Metabolic Risk factors, and Inflammation

Research suggests that bioactive fatty acids in whole milk lowers metabolic risk factors and may decrease the incidence of diabetes (Mozaffarian et al. 2010). The aim of this double blind, randomized, crossover, human intervention study is to investigate the impact of the bioactive fatty acids in whole milk on insulin sensitivity, metabolic risk factors, and inflammation in ten normal weight women (BMI between 18.5-24.9). To test the effects of the bioactive fatty acids in milk, the volunteers will have to eat controlled diets. For this purpose, we designed a 2-d cycle standardized menu for the control diet (run-in) and a 3-d cycle standardized menu for the experimental diets. The control diet was constructed to represent a typical American diet (15% protein, 47% carbohydrates, and 37% fat with 16% saturated fatty acids, SFA; 14% monounsaturated fatty acids, MUFA; and 7% polyunsaturated fatty acids, PUFA). The experimental diets were designed to provide three daily servings of either whole yogurt or non-fat yogurt supplemented with a control fat (to achieve the same fat content as whole yogurt). The experimental diets are eucaloric with identical macronutrient compositions (15% protein, 30% fat, and 55% carbohydrates representing a DASH-like diet). The goal of the major fatty acid class composition (SFA, MUFA, and PUFA) of the experimental diets as a percentage of total energy was 9% from SFA, 15% from MUFA, and 6% from PUFA. The main difference between the experimental diets, however, relates to the bioactive fatty acids (vaccenic acid, branched-chain-fatty acids, conjugated linoleic acids, short-chain fatty acids) within the major fatty acid classes which are unique to dairy fat. The similar nutrient profiles of the experimental diets allow for the isolation of dairy fat to better understand its effects on the human body. Currently, subjects are being actively recruited to enroll in the study.