Effect of varying levels of free fatty acids from palm oil on milk production and feed intake in Holstein cows

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To determine the optimum feeding level for free fatty acids of palm oil (PALM) (Energizer RP10; 92% palmitic acid), lactating cows (n =18) were randomly assigned to a treatment sequence in replicated 4 x 4 Latin squares. Animals were assigned to squares by parity (3 multiparous and 1 primiparous with primiparous in the incomplete square). The four diets were designed to provide 0, 500, 1000 and 1500 g of PALM per day. The amount of free fatty acids was adjusted on a daily basis to be 0, 1, 2 or 3% of the total mixed ration based upon the ration dry matter. Cows were fed individually with feed intake determined daily. Each period lasted 16 d with milk production and composition determined the final 2 d. Milk production, milk composition and feed intake data were analyzed using the MIXED procedure of SAS. Milk yields were 30.9, 34.0, 34.2 and 34.2 kg/d (SEM = 1.9) for the 0, 500, 1000 and 1500 g levels, respectively. Milk yield was increased ($P<0.001$) by the addition of PALM; however, there were no differences among the levels of PALM. Fat percent was also increased ($P<0.01$) by the addition of PALM from 3.44% for 0 g to 3.93 % for 500 g (SEM = 0.17) but there were no differences among the PALM treatment levels. Dry matter intakes were 23.4, 26.3, 24.4 and 23.4 kg/d (SEM = 1.4) for the 0, 500, 1000 and 1500 g levels, respectively. The addition of PALM increased milk yield, fat percentage and feed intake, while no adverse effects on milk protein concentration were observed. Feeding 500 g/d of PALM maximized milk yield, milk fat percentage, and feed intake.