

Effect of Feeding Ground versus Whole Safflower Seed and Safflower Oil on Milk Fatty Acid Composition in Cows*

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It is normal practice in commercial dairies to include lipid supplements (at 2-5% of dietary DM) as an energy source in the diet of dairy cattle. The source of lipid is usually tallow or canola oil as these are relatively economical compared to oils such as safflower, sunflower or flax seed. However, for the purpose of increasing milk conjugated linoleic acid (CLA) content, it is necessary to use oils such as sunflower or safflower. Whole oilseeds are less expensive than the oils, but some of them need processing to be effective in increasing milk CLA levels. Studies conducted at the DRTC to test the feasibility of using sunflower or flax seed in dairy rations have shown that flax seed requires processing while sunflower seed does not when it is fed to dairy cows. Does safflower seed require processing for efficient utilization and production of CLA enriched milk? Our objective in this study was to determine the effect of feeding whole or ground safflower seed, or safflower oil on milk fatty acid composition and yield.

We used 40 lactating Holstein cows to test 4 dietary treatments: 1) CTL - no added fat, 2) GSS – ground safflower seed, 3) WSS – whole safflower seed and 4) SO – safflower oil. The lipid levels in the three safflower diets were maintained at 3% dietary dry matter. Dry matter intake in the animals on GSS diets was significantly higher than those on SO and WSS diets, averaging 21.3, 22.2, 19.5, 18.6 kg/day for CTL, GSS, SO and WSS respectively. Milk yield, fat and protein yield were not different across the treatments, but milk fat and protein percentage in GSS, SO and WSS groups were significantly lower than those in CTL group. The concentrations of milk cis-9, trans-11 CLA and trans-11 C_{18:1} were highest with SO but were not different among the other treatments, while the concentration of trans-10, cis-12 CLA was higher with GSS, WSS and SO compared to CTL.

Take Home Message: In this study we did not observe any beneficial effect in terms of increasing milk CLA levels by processing safflower seed and suggest that whole safflower seed is as effective as ground safflower seed in increasing milk CLA levels.

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