

THE EFFECT OF RUMINAL BYPASS FAT ON MILK YIELDS AND MILK COMPOSITION OF LACTATING DAIRY COW

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Abstract

A study was conducted to determine the effect of feeding rumen-bypass fat on performance of dairy cows. Twenty four Holstein Friesian crossbred (>87.5% Holstein Friesian) lactating dairy cows in early-mid lactation, averaging 23.3 ± 3.5 kg of milk, 85 ± 5 days in milk, 60.8 ± 5.9 months old and 464 ± 43 kg live weight, were stratified for milk yield, days in milk, age, stage of lactation and body weight, and then randomly allocated to two treatment groups. All cows were fed approximately 10 kg of concentrate together with *ad libitum* grass silage and freely access to clean water. Nil or 300 g of rumen-bypass fat was supplemented to the cows according to the treatment groups. All cows consumed similar amount of concentrate, roughage and total dry matter (DM) and crude protein (CP). There were no significant differences in milk yields and milk composition yields. All cows had similar fat, protein, lactose, solid not fat and total solid percentage in milk. All cows lost similar live weight. Rumen-bypass fat supplementation significantly ($p < 0.05$) reduced C4:0 but increased C12:0 and C14:0 fatty acids of the cows' milk. The present study indicated that supplementation of rumen-bypass fat did not enhance milk yields, milk composition and live weight change.

Keywords: Rumen-bypass fat, milk production, milk composition, dairy cattle

Introduction

During early lactation, the amount of energy required for maintenance of body tissues and milk production often exceeds the amount of energy available from the diet (Goff and Horst, 1997), thus forcing mobilization of body fat reserves to satisfy energy requirement. Prilled saturated fatty acids and calcium (Ca) salts of long-chain fatty acids have been shown to be effective as ruminally inert fat supplements for lactating cows (Grummer, 1988; Palmquist, 1991). Rumen inert fats, such as Ca salts of

long-chain fatty acids or other forms of rumen-bypass fat, are often fed to increase the dietary energy supply. Responses to supplementation of dairy cow diets with rumen-bypass fat have been variable. For example, feeding rumen-bypass fat to dairy cows has been reported to increase fat-corrected milk yield (Erickson *et al.*, 1992), milk and fat-corrected milk yields (Klumsmeier *et al.*, 1991a; Rodriguez *et al.*, 1997), and milk fat percentage (Klumsmeier *et al.*, 1991a, 1991b; Sklan *et al.*,

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