



Fat depression in milk obtained from Simmental and native (Yerli Kara) cows in first month of postpartum period

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Key words: Milk, Fat, Depression, Cow, Postpartum

<http://dx.doi.org/10.12692/ijb/9.6.125-128>

Article published on December 11, 2016

Abstract

The aim of this study is to present some important knowledge about fat depression levels in non dairy cows during first month of postpartum period. The daily milk fat data were obtained from a herd in the same farm in Mazgirt County of Tunceli Province in Turkey. In study, groups were generated as; for 30 Simmental cows; light (≤ 600 kg), medium (600-700kg) and heavy (≥ 700 kg) and for 30 Native cows (Yerli Kara); light (≤ 200 kg), medium (200-250kg) and heavy (250 kg \geq). All cows fed TMR diets containing 60% forage and 40% concentrate. The milk fat rate was determined by automatic. The means of milk fat for all groups were compared with the milk fat depression level (3.2%) using one-sample t test. There were no fat depression levels in all weight groups (heavy, medium, light) of Simmental cows (4.50, 4.46, 4.41 %, respectively). Similarly, the milk fat rates were not lower than test value (3.2%) in Native cows for each weight groups (5.45, 5.16, 4.71 %, respectively). In study, there were no fat depression levels in milk obtained from heavy, medium and light dams of each breed during postpartum period. Different live weight non-dairy cows have sufficient body fat and energy reserves for required fat production in milk during postpartum period.

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Introduction

During 1 or 2 months from postpartum period, body fat tissues are highly mobilized in high producing dairy dams. Roughage intake can influence the mobilization of body fat reserves in this period. Dams fed a roughage based diet produced the highest milk fat yields and lost the most body weight during this critical term (Sparrow *et al.*, 1973). Seymour *et al.* (1986) have reported that high energy intake before postpartum period can increase milk fat levels during the postpartum period. Adipose tissue can serve as a significant energy source for milk fat synthesis during the mentioned period. There was a correlation between offspring behavior and the amount of milk fat rates in this critical period (Cimen 2007; 2012a). Therefore milk fat level is important for young animal life and dairy products during this stage. Milk fat depression is a big problem during the above mentioned term in high milk yield dairy cows. Milk fat depression is defined as milk fat level below 3.2 percent in milk of cows (De Vries and Veerkamp, 2000). Few studies have studied the effects of dam body weight on milk fat depression when cows begin milk yield during postpartum period in non-dairy cows. Little is known about factors affecting milk fat depression in this period. This is the first detailed study for determination of milk fat depression levels in non-dairy breeds during this critical stage.

Materials and methods

Animals and feeds

The daily milk fat data were obtained from a herd in the same farm in Mazgirt County of Tunceli Province

in Turkey. Groups were generated as; for 30 Simmental cows; light (≤ 600 kg), medium (600-700kg) and heavy (≥ 700 kg) and for 30 Native cows (Yerli Kara); light (≤ 200 kg), medium (200-250kg) and heavy ($250 \text{ kg} \geq$). All cows fed Total Mixed Rations (TMR) containing 60% forage and 40% concentrate.

Analyses of the individual milk samples

Milk fat levels recorded first day of each week throughout the first month of postpartum period. The samples were composites of milk collected at consecutive morning and afternoon and were collected into plastic vials preserved with microtabs, stored at 4 °C until analyzed for determination of milk fat. The milk samples from each cow were analyzed separately by automatic analysis using a Farm Milk Analyzer (Funke Gerber Lactostar, 3510).

Statistical analysis

The means of milk fat for all groups were compared with the fat depression level (3.2%) using one-sample t test (Çimen, 2012b; Çimen, 2016 a;b). The data were presented as mean \pm standard error. Comparisons were done with help of the SPSS 18 statistical program (Çimen, 2015; Ntoumanis, 2005).

Result and discussion

Milk fat data of Simmental cows are in Table 1. Milk fat levels for heavy, medium and light body weight groups were 4.50, 4.46 and 4.41 % respectively. As shown the Table 1, there were no fat depression levels in all weight groups of Simmental cows.

Table 1. Fat depression levels in milk from Simmental cows.

Groups	Total fat, %	Significance level
Heavy	4.50 \pm 0.27	P>0.05
Medium	4.46 \pm 0.22	P>0.05
Light	4.41 \pm 0.46	P>0.05

The results in Table 2 indicate that the milk fat rates were not lower than test value (3.2%) in Native cows for each weight groups.

The body weight of dam is an assessment of body fat that it possesses, and it is recognized by researchers and cow producers as being an important

factor in animal management (Cabiddu *et al.*, 1999). Fat metabolism of lactating animals and its secretion into milk is affected by the body weight of dam and light dams were shown to be more sensitive to milk fat depression than heavy ones during postpartum period (Cimen *et al.*, 2008).

However, in our study, we couldn't find any relationship between dam weight and fat depression levels in non-dairy cows for mentioned period. Differences in body weights of each cow breed did not affect milk fat levels for depression test. High energy intake during postpartum

period supported higher milk fat levels during early lactation period (Yadava *et al.*, 1973). Although much is known about causal relationships between composition of the diet and milk fat depression, but little is known about differences in milk fat depression between genotypes or live weights.

Table 2. Fat depression levels in milk from Native cows (Yerli Kara).

Groups	Total fat, %	Significance level
Heavy	5.45± 0.16	P>0.05
Medium	5.16 ± 0.13	P>0.05
Light	4.71 ± 0.66	P>0.05

Milk fat may be depressed in non-dairy cows as a result of insufficient roughage and energy intake, especially during postpartum period. Whereas in our study, there were no fat depression levels in milk obtained from heavy, medium and light dams of each breed during this critical period. The most striking finding of our study is that non-dairy cows may have sufficient body fat and energy reserves for required fat production in milk during postpartum period. The milk fat levels are favorable for non dairy cows when roughage and energy intake is sufficient. Further researches are needed for non-dairy and native cows on fat depression levels in their milk during postpartum period and other periods such as early, middle and late lactation stages.

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