



The effect of birth type on somatic cell and total bacteria counts in milk of dairy cows

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Key words: Birth type, Somatic cell, Total bacteria, Milk, Cow

<http://dx.doi.org/10.12692/ijb/10.1.242-245>

Article published on January 29, 2017

Abstract

The aim of this study is to present some important knowledge about somatic cell and total bacteria counts of raw milk obtained from different birth types (twin or single) in dairy cows during first month of early lactation period. The dams of single and twin calves fed diets containing 60% forage and 40% concentrate. The effect of birth type on somatic cell and total bacteria levels independent two sampled t-test analysis method was used in this study. Somatic cell counts in raw milk of the cows giving birth to twin and single calves have statistical similarities. Similarly, there were no significant differences between total bacteria counts in milk of single and twin groups for early lactation period in this study. Further researches are needed for dairy species on somatic cell and total bacteria counts in their milk during early, middle and late lactation.

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Introduction

Raw milk contains important nutrients for live weight gain of calves and provides easy way of supplying these nutrients to the intake of offspring. The regulation of mammalian development depends to a large extent on maternal biochemical pathways to offspring of dam. The somatic cell and total bacteria counts are important to dairy producers and udder health of dairy animals. Somatic cells are blood cells and take place naturally in milk of dairy animals. The total bacteria count is the number of bacteria in milk. Somatic cells arise only from inside the dam's udder, while the bacteria are usually from outside contaminations. Cow milk quality can have a significant effect on milk processing efficiency and product quality (Olson and Mocquat, 1980).

Somatic cell count is a key parameter of regulations for cow milk quality. It is a pointer of udder health, and of the prevalence of mastitis in dairy cows. It is used to monitor udder health and milk quality of dairy cattle. The greater the somatic cell count, the higher the risk of milk contamination with pathogens (Jones, 2006). Bacteria existence in raw milk may affect a human health risk as well as quality problems in dairy milk.

Animal and environmental factors are significance parameters for the life of young animal and dairy products during lactation period (Yildirim and Cimen, 2009; Inal and Cimen, 2016). There was a correlation between offspring behavior and the amount of milk ingredients (Cimen 2007; 2012). The effect of birth type of offspring on milk components or animal morphology in animals has generated a large amount of interest in the past years (Cimen, 2006; Çakir Sahilli and Çimen, 2016). Therefore, in this research, effect of birth type of calves in dairy cows on somatic cell and total bacteria counts was studied.

Material and method

Cow material and diets

In this study, we tried to obtain the effects on milk somatic cell and total bacteria counts of different birth types (twin or single) in dairy cows.

10 dairy cows (Holstein) based on different birth type of calf were divided into 2 groups (single and twin groups). All cows in the research fed diets containing 60% forage and 40% concentrate.

Milk samples and laboratory analyses

Milk sample for once was taken from the cows in the last two days of the first month of early lactation period. Somatic cell and total bacteria data as the mean of last two days of the first month of early lactation period were obtained. Equal amount of milk was taken from the teat of the dams. Milking was performed to sterilized and numbered sample vessels. After milk samples (200ml) were taken for the analysis, it was carried to the laboratory in a short period. The somatic cell count within taken raw milk samples was detected by the standard analysis (Microscopic count) method in the Munzur University lab. Standard Plate Count (SPC) method recommended for dairy products was followed for analysis of total bacteria count (Saxena and Rai, 2013).

Statistical analysis of data

The effect of birth type on somatic cell and total bacteria levels, homogeneity test for homogeneity of data and independent two sampled t-test analysis method was used (Cimen, 2015 & 2016). SPSS package program was used to make announced statistical analysis (Norusis, 1993).

Result and discussion

The effect of birth type on somatic cell counts in milk

As shown the Table 1, somatic cell counts of the cows giving birth to twin and single calves have statistical similarities ($p > 0.05$). From this result, it can be said that birth type of calf doesn't have an influence on milk somatic cell counts.

It was noticed in this research that milks of dams obtained from both different birth types were in the borderline specified for healthy animals (Kaneko *et al.*, 1997). According to these results, birth type of calf didn't have an influence on announced constituent.

Table 1. The effect of birth type on milk somatic cell counts.

Birth Type	Mean	Standard Error	Significance level
Single	85600	10614	0.228
Twin	92400	13377	

The effect of birth type on total bacteria counts in milk

The results in Table 2 indicate that the milk total bacteria counts in cows giving birth to twins were not differ than cows giving birth to single ($p>0.05$).

There were no significant differences between total bacteria counts in milk of single and twin groups for early lactation periods in our study. Although some studies have examined the effects of animal factor such as udder morphology on milk hygiene parameters (Dimitar *et al.*, 2014),

the studies on correlations between birth type of offspring and total bacteria counts in raw milk during early lactation period are not available in literature. Therefore we studied to observe the impact of birth type of calves on total bacteria counts in raw milk in this critical period. In this study we studied to find the relationships between birth type of offspring and milk total bacteria counts. There is an urgent need for more information on milk total bacteria counts and birth type of dairy and non dairy breeds of cows and other species in early lactation period.

Table 2. The effect of birth type on milk total bacteria counts.

Birth Type	Mean	Standard Error	Significance level
Single	84000	13266	0.183
Twin	102000	18275	

Confirming the findings found in this study with other dairy or non dairy cattle races will be useful. Information related to somatic cell counts of the dairy cattle giving birth to twins or single isn't available in the dairy literature. Therefore, further researches are needed for dairy or non dairy cows on somatic cell counts in their milk during all lactation period such as early, middle and late lactation.

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