Monitoring Milk Somatic Cell Counts

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Abstract

The presence of somatic cells in milk is a widely disputed issue in milk production sector. The somatic cell counts in raw milk are a marker for the specific cow diseases such as mastitis or swollen udder. The high level of somatic cells causes physical and chemical changes to milk composition and nutritional value, and as well to milk products. Also, the mastitic milk is not proper for human consumption due to its contribution to spreading of certain diseases and food poisoning. According to these effects, EU Regulations established the maximum threshold of admitted somatic cells in raw milk to 400000 cells / mL starting with 2014. The purpose of this study was carried out in order to examine the raw milk samples provided from small farms, industrial type farms and milk processing units. There are several ways to count somatic cells in milk but the reference accepted method is the microscopic method described by the SR EN ISO 13366-1/2008. Generally samples registered values in accordance with the admissible limit. By periodical monitoring of the somatic cell count, certain technological process issues are being avoided and consumer's health ensured.

Keywords: somatic cell count, mastitis, raw milk composition

Introduction

The somatic cell count (SCC) in milk is an often discussed topic in the sectors of milk production and industrialization.

Milk somatic cells have endogenous origin. They are epithelial, leukocytes and erythrocytes cells (Souza et al., 2012). The number of leukocytes increases in response to bacterial infection, tissue injuries and stress, which constitute a weapon of defense against infection (Nagahata et al., 1987).

SCC in milk is necessary because their number increases in the presence of mastitis (Nagahata et al., 1987; Norman et al., 2011; Souza et al., 2012), negatively influencing cheese quality by proteolytic enzymes present in mastitic milk. By increasing SCC in milk causes changes in milk production and physicochemical changes in the composition and nutritional value of it.

EU legislation (Regulation no. 853/2004 / EC) requires for raw cow milk a maximum limit of 400,000 SCC / mL.

Aims and objectives

The purpose of this study was carried out in order to examine the raw milk samples provided from small farms, industrial type farms and milk processing units.

Materials and methods

There are several ways to count somatic cells in milk but we conducted our study to the reference accepted method described by the SR EN ISO 13366-1/2008.

Samples received in the laboratory (from local producers, intensive farms and from milk processing units) were kept in at refrigeration temperature and processed within 6 hours after collection. Raw milk was heated at 40 °C in a water bath and then cooled to a temperature of 20°C. An amount of 0.01 mL of sample was transferred on a degreased and sterilized blade. Milk was dispersed on the surface of 1 cm², dried completely at room temperature. SCC was counted at the microscope field area bounded by 5/20 mm.
**Results and Discussion.** Tab. 1 summarizes the results obtained.

Among the 59 examined samples, a single sample from a local producer had SCC exceeding the limit imposed by the law.

**Conclusion.** Counting of somatic cells in milk is of great importance for local producers and milk processing units. The maximum limit of SCC in raw milk is determined by legal norms, as mastitic milk cannot be accepted for human consumption.

**References**