

EFFECT OF SOMATIC CELLS COUNT OF RAW MILK ON THE CARBONYL COMPOUNDS AND LOW MOLECULAR WEIGHT FATTY ACIDS FORMATION IN AYRAN

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Abstract

The production of high-quality milk is a requirement to sustain a profitable dairy industry. Losses due to mastitis include decreased milk production, increased treatment costs, discarded milk, and loss of milk quality premiums. Somatic cell count values are routinely used to identify subclinical mastitis and played role as quality parameter of raw milk. The aim of present study was to investigate the effect of somatic cells count (SCC) of raw cow's milk on the carbonyl compounds and low molecular weight fatty acids formation in ayran.

Test ayran samples were produced from three different batches of cow's milk with low (up to 400,000 cells/mL), medium (between 500,000 and 600,000 cells/mL) and high (above 1,000,000 cells/mL) SCC, respectively. The physicochemical parameters of the raw milk and ayran samples were determined by using Infrared Milk Analyzer 150. The volatile organic compounds in ayran samples were determined by gas chromatography-mass spectrometry (GC-MS) analysis.

A lower content of diacetyl, acetoin, hexanal, and heptanal, and a higher content of acetone, 2,3-pentanedione and butanoic acid were established in the ayran samples from batches with higher SCC (between 500,000 and 1,000,000 cells/mL). The increased SCC of raw cow's milk had a negative effect on the profile of the carbonyl compounds in ayran, which may lead to deterioration in its sensory quality and to shelf life reduction, respectively.

Our research presents the current knowledge about the effect of SCC on the volatile organic compounds profile of ayran. Such knowledge will help for development and implementation of more complete udder health programs and monitoring systems in dairy farms in order to improve raw milk and ayran quality.

Keywords: Ayran, Carbonyl compounds, Low molecular weight fatty acids, Sensory quality, Somatic cells.