Differential Somatic Cell Count as a Tool for Early Diagnosis of Mastitis in Dairy Herds
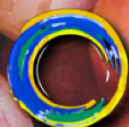
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Routine milk analysis holds significant importance in verifying compliance with the identity and quality standards established by Brazilian legislation, as well as enabling field decision-making process, based on individual and herd health indicators. The aim of this study was to evaluate the composition, somatic cell count (SCC), and differential somatic cell count (DSCC) of individual milk samples to verify compliance with current legal standards and correlate these parameters with the udder health of the evaluated animals. For this, 100 cow milk samples received at the Milk Quality Laboratory of the Food Research Center at the Federal University of Goiás were selected. The levels of protein, fat, lactose, and total solids were analyzed by infrared spectroscopy, while SCC and DSCC were evaluated by flow cytometry. The results were tabulated in an Excel spreadsheet for the calculation of the arithmetic mean, obtaining values of 3.12g/100g of fat, 3.10g/100g of protein, 4.73g/100g of lactose, and 11.67g/100g of total solids. For SCC, the values of eight samples (8%) ranged from 717,000 cells/mL to >26,000,000 cells/mL, exceeding the regulatory maximum limit of 500,000 cells/mL. From the joint evaluation of SCC and DSCC values, of the 100 samples analyzed, 59% were classified as normal, 19% were associated with the development of an initial inflammatory process, 7% were considered inactive to the inflammatory response, and 15% were associated with nonspecific mastitis. Regarding proximate composition, all samples met the current legal parameters. Concerning the other analyses, samples with values greater than 500,000 cells/mL were associated with conditions of nonspecific mastitis due to increased infiltration of polymorph nuclear cells, while samples with SCC values up to 100,000 cells/mL had normal DSCC parameters, given the lower number of defense cells. Of the analyzed samples, 8% showed SCC above the permissible limit, indicating udder health problems, particularly nonspecific mastitis, which is a concerning finding. DSCC is a crucial tool for the early detection of inflammation and the maintenance of herd health and should be incorporated into the routine monitoring of individual SCC in herds. The greater availability of information is fundamental for the early diagnosis of mastitis and for determining management and treatment measures, aiming at herd health, efficient cost management, and, above all, the production of high-quality milk.