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Diagnosis of Subclinical Mastitis Using Different Methods, with Isolation of Different Causative Organisms from Cow's Milk

Thesis Submitted by

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ABSTRACT
A total of 214 bulk tank milk (BTM) samples and a total of 832 individual quarter milk samples (IQMS) of clinically recognized and apparently normal quarters of 208 lactating cows were collected from different dairy farms in Alexandria, Menofia and El-Dakahlia Governorates, Egypt. Bulk tank somatic cell count and associated risk factors influencing the hygienic quality and chemical composition of raw milk were investigated. Different mastitis indicators as screening tests **(**California Mastitis Test "CMT" and Somatic Cell Count "SCC"); milk constituents; pH value; enzymes activities (milk lactate dehydrogenase LDH, Acid phosphatase ACP, alkaline phosphatase ALP and glutathione peroxidase GPx) and bacteriological examination were applied on IQMS to assess the potential relationships between these parameters and their possibility of being markers for diagnosis of mastitis. In BTM analysis, the mean values of SCC/ml, Aerobic Plate Count APC (cfu/ml), Coliform count (MPN/ml), *S. aureus* count and *B. cereus* count (cfu/ml) were $6.85\times10^5\pm0.33\times10^5$, $7.09\times10^6\pm2.76\times10^6$, $2.77\times10^4\pm0.63\times10^4$, $1.27\times10^3\pm0.25\times10^3$ and $3.32\times10^3\pm0.13\times10^3$, respectively. The results reveal the presence of *S. aureus*; CNS; *St. uberis, E. coli* and *B. cereus* with different percentages from the examined samples. In the level of IQMS, the mean SCC of all positive and negative CMT samples was $8.78\times10^5\pm3.49x10^4$ and $1.63\times10^5\pm6.29x10^3$ cells/ml respectively. The mean values of milk fat, protein, SNF, lactose and ash content were significantly higher in IQMS from normal quarters than those from subclinical or clinical ones; while chlorine %, pH values and enzymes activity increased with the progress of infection. *S. aureus, E. coli,* coagulase negative staphylococci (CNS), *St. uberis* and other streptococci could be isolated at varying percentages from the IQMS. Meanwhile, *Trueperella pyogenes*, *St. agalactiae* and *St. dysgalactia*e failed to be isolated from any of the examined IQMS. Consequently, LDH and ACP proved to be better and more reliable biomarkers for early diagnosis of subclinical mastitis.

Key words: Mastitis, Bulk Tank Milk, Milk Constituents, California Mastitis Test, Somatic Cell Count, Enzymes Activity, Bacteriological Culture.

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