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Summary

One hundred random samples of market and bulk raw milk (50 of each) and 50 concentrated (25 each of condensed and evaporated) milk, collected from different localities in Damietta Governorate.

A survey was conducted to determine the hygienic quality of concentrated and raw milk samples.

The obtained results revealed that the mean values of acidity in examined market and bulk raw milk were 0.20 ± 0.0007 and 0.21 ± 0.0007 respectively.

The methylene blue reduction time showed that 64% of examined raw milk samples had a reduction time 5 hours or more while 36% had a reduction time less than 5 hours.

The mean total colony counts/ml of examined market and bulk raw milks were 3.7×10^7 and 2.7×10^7 respectively.

Prevalence of coliforms contamination were 84% and 74%, while the mean coliform counts (MPN/ml) were $5 \times 10^2 \pm 0.85$ and 77.8 ± 0.30 for market and bulk raw milk samples respectively.

Prevalence of E.coli in the examined market and bulk raw milk samples were 66% and 86% with mean value of 39.6 ± 0.99 and 6.2 ± 0.63/ml of milk respectively.

Out of the tested E.coli isolates (10) E.coli serotypes (O152 poly 8), (O26 poly 1), (O63 poly 5), (O164 poly 8) and (O86a poly 1) represented 3, 3, 2, 1, and 1 of the total isolates respectively.

Staphylococcus aureus was isolated from 40% and 64% with mean value / ml $3.7 \times 10^5 \pm 1.8 \times 10^5$ and $6.1 \times 10^5 \pm 3.5 \times 10^5$ of market and bulk raw milk samples respectively, while Bacillus cereus was isolated from 4% and 16% with mean count/ml 2×10^5 and 1.7×10^5 of market and bulk raw milk samples respectively, and Yersinia enterocolitica was isolated from 48% and 38% of market and bulk raw milk samples respectively.

None of examined market and bulk raw milk samples was positive for Salmonellae.

Grading of examined raw milk samples with **Egyptian standards (2001)** showed that 8%, 53% and 26% exceeded the standard limits for Bacillus cereus, Staphylococcus aureus and MBRT respectively.

Grading of examined raw milk samples with **Robinson Standards (1990b)** declared that 98%, 3%, 8%, 53% and 61% exceeded the standard limits for total colony count, colifroms, Bacillus cereus, Staphylococcus aureus and MBRT respectively.

The result obtained in our investigation showed that all examined raw milk samples were in agreement with Egyptian Standards for Salmonellae.

Out of 25 examined condensed milk samples 6(24%) were found to contain bacteria and the mean count was 2.2×10^4 / ml, while out of 25 examined evaporated milk samples 8(32%) had a total colony counts ranged from 30 to 6.0×10^5/ml.

Prevalence of Bacillus stearothermophilus in examined concentrated milk samples were 4(16%) and 2(8%) with mean count $2.7 \times 10^3 \pm 1.04 \times 10^3$ and $4 \times 10^3 \pm 3.5 \times 10^3$ for condensed and evaporated milk samples respectively, while

prevalence of pathogenic bacteria in examined concentrated milk samples showed that none of examined condensed and evaporated milk samples contained Clostridium spp., Bacillus cereus, E.coli or Staphylococcus aureus.

Prevalence of mould and yeast of examined condensed milk samples revealed that out of the examined samples 16% and 20% were found to be contaminated with mould and yeast with mean counts 5.6×10^2 and 66/ml respectively.

Mould and yeast were isolated from 40% and 32% with mean value/ml 43.3 ± 0.18 and $1.2 \times 10^2 \pm 0.37$ of evaporated milk samples respectively.

Asperigillus spp. or Rhizopus spp. could not be detected in examined sweetened condensed milk, while Cladosporium spp. and Penicillium spp. could be detected in 8% each of the examined samples. Moreover, Cladosporium spp. could not be detected in any of examined evaporated milk samples, while Asperigillus spp., Rhizopus spp. and Penicillium spp. could be isolated from 8%, 8% and 24% respectively.

Grading of examined sweetened condensed milk samples according to **Egyptian Standards (1990)** for microbiological examination showed that none of examined samples exceeded the standard limits for coliforms, while total colony count showed that 20% of examined samples were exceeded the standard limits.

Grading of examined sweetened condensed milk samples according to **Suggested Microbiological Standards, Robinson (1990b)** showed that 24% and 36 % of samples exceeded the standard limits for total colony count and

mould & yeast respectively, while none of samples exceeded the standard limits for coliforms.

Spectrophotometric determination of nitrates and nitrites levels in examined condensed milk samples indicated that the mean values 95.425±6.943 and 0.3726±0.032771 mg/kg respectively, while the average values in examined evaporated milk samples were 7.937±0.36718 and 0.047034±0.002791 respectively.

Out of 25 examined condensed milk samples 22 (88%) had nitrate concentration above the permissible limit, while all examined samples had nitrite lower than the recommended permissible limit. Mean while all examined evaporated milk samples contain nitrate and nitrite below the recommended permissible limits.

Heat treatment increased nitrate contents of milk as pasteurized milk has 2.01 time nitrate content than that of raw milk while sterilized and UHT milk has 3.16 and 2.16 time than that of raw milk respectively.

The public health significance and economic importance were discussed.