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CONCLUSION AND RECOMMENDATIONS

Generally milk is one of few foodstuff consumed as its natural state. It is considered as the most perfected single foodstuffs. It contains all digestible nutrients needed by the body in proper and well balanced proportions.

From all the presented data, it is clear that there were some variations in the chemical composition of examined samples which obtained in this study and those recorded by other investigators.

These variations may be attributed to methods used for determination of these constituents, individuality of animal, amount and type of feed eaten, seasons, lactation duration and climate.

As raw milk and dairy products reaches the consumer through long chain of industrial production in which many opportunities for contamination exist. These microorganisms including *Bacillus cereus*, *Clostridium perfringens* and *E. coli* O_{157} may contaminate milk via different sources including hands of milkers, udder, air, dust, flies, Polluted water supply, manufacturing, and distribution of milk products. Therefore the presence of these microorganisms in milk and dairy products constitute

a public health hazards and may produce deadfall diarrhea, gastritis and food poisoning.

So, to improve the quality of the products and to safe guard consumers from being infected, the following suggestions are to be considered.

- Milk must take from healthy clean animal.
- Strict hygienic measures should be adopted in dairy farms to ensure production of clean milk.
- Using of high quality milk adopted for manufacturing of dairy products.
- Continuous refrigeration of milk from time of milking till used in manufacturing of dairy products to about $4^{o}C$.
- Precaution should be taken to control and protect water from contamination on farms and dairy plants.
- Good sanitary conditions should be applied during processing of milk products.
- Efficient cleaning, sterilization and sanitation of all utensils and equipment.

- Heat treatment of milk should be correctly applied beside strict control measures to prevent post-pasteurization contamination.
- Handling and distribution should be done under strict hygienic measures.
- Storage of milk products under refrigeration at all timed till reaching the consumers.
- Health examination should be given to persons who handle dairy products to prevent transmission of microorganisms by food handlers into the food chain.
- Educational programs should be imposed for producers, processors and handlers to improve the milk products quality and to ensure a maximum safety to consumers.
- Application of HACCP system as it is considerable improvement on the traditional approach to ensure safety and quality assurance of dairy products.
- The consumers should remain to buy clean covered products.

SUMMARY

Three hundred random samples (100 market raw milk, 50 each of cream, ice cream, white cheese and Ras cheese), collected from different localities in Mansoura City, and subjected to chemical and microbiological examinations.

The results can be summarized as follows:

1. Chemical analysis.

1.1. Market milk.

The fat of the examined raw milk samples ranged from 0.94 to 11.48 with a mean value of 5.92 ± 0.137, 29% of examined samples failed to comply the Egyptian standards, while protein contents ranged from 3.46 to 4.58% with a mean value of 4.306 ± 0.05. Determination of lactose content of raw milk denoted that it varied from 4.69 to 5.88% with a mean value of 5.06 ± 0.078. Solids not fat content ranged from 8.81 to 14.74% with a mean value of 11.2 ± 0.15, 100% of examined samples fulfill the Egyptian standards.

1.2. Cream:

Acidity percent of cream ranged from 0.13 to 0.25% with a mean value of 0.188 ± 0.0052.

1.3. Ice cream.

The melting point of examined ice cream samples varied from 4.0 to 20.0 minutes with a mean value of 10.35 ± 0.646. While the meltdown of examined ice cream ranged from 21.5 to 75 min. With a mean value of 44.5 ± 2.16 min.

1.4. White cheese.

The Salt content of examined white cheese ranged from 1.58 to 7.31% with a mean value of 4.196 ± 0.256%. All Samples comply the Egyptian standards. While the moisture content of examined white cheese samples ranged from 20 to 66.67% with a mean value of 51.48 ± 1.73. 12% of samples failed to confirm Egyptian standards.

1.5. Ras cheese.

The Salt content of examined Ras cheese samples ranged from 1.46 to 2.92% with a mean value 2.053 ± 0.069. While the moisture content varied from 6.67 to 23.33% with a mean value of 14.38 ± 0.75.

All samples lied within a permissible limit of Egyptian Standards.

2. Bacteriological examination.

2.1. *Bacillus cereus* count.

The mean value of *Bacillus cereus* count of the examined market raw milk, cream, ice cream, white cheese and Ras cheese were $6.4 \times 10^3 \pm 4.1$

$\times 10^2$, $7.9 \times 10^4 \pm 10.3 \times 10^3$, $1.2 \times 10^5 \pm 1.8 \times 10^3$, $1.15 \times 10^5 \pm 1.6 \times 10^4$ and $2.5 \times 10^5 \pm 4.3 \times 10^4$ cfu/ml , respectively.

The highest frequency distribution of *Bacillus cereus* in examined market raw milk, cream, ice cream, white cheese and Ras cheese were 66.67, 43.75, 55.55, 52.17 and 44.44%, which lies the range of $10^3 < 10^4$, $10^4 < 10^5$, $10^4 < 10^5$, $10^4 < 10^5$ and $10^5 < 10^6$ cfu/ml, respectively.

2.2. *Clostridium perfringens count.*

Incidences of *Clostridial* organisms in examined market raw milk, cream, ice cream, white cheese and Ras cheese samples were 60(60%), 10(20%), 20(40%), 25(50%) and 27(54%), respectively on using stormy fermentation test.

The mean values of *Clostridium perfringens* count of the examined market raw milk, cream, ice cream, white cheese and Ras cheese were $2.1 \times 10^4 \pm 3.3 \times 10^3$, $1.4 \times 10^3 \pm 0.8 \times 10^2$, $1.5 \times 10^3 \pm 1.4 \times 10^2$, $9.9 \times 10^3 \pm 2.1 \times 10^3$ and $7.2 \times 10^3 \pm 10 \times 10^2$ cfu/ml, respectively.

The highest frequency distribution of *Clostridium perfringens* in examined market raw milk, cream, ice cream, white cheese and Ras cheese were 57.14, 60, 75, 60 and 75% which lies in the range of $10^3 < 10^4$ cfu/ml in milk and all milk products, respectively.

3.3. *Escherichia coli O157*

Serological qualitative detection of *E.coli* O_{157} in examined market raw milk, cream, ice cream, white cheese and Ras cheese samples were 1, 6, 0, 12 and 10%, respectively.