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**Faculty of Veterinary Medicine
Department of Food Hygiene**

BIOHAZARDS IN SKIMMED DAIRY PRODUCTS

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Presented by

Zeinab Ahmed Mohamed Sayed-Ahmed

(B. V. Sc., Faculty of Veterinary Medicine, Alexandria University, 2011)

(M. V. Sc., Faculty of Veterinary Medicine, Alexandria University, 2016)

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7. SUMMARY

Two hundred and ten samples of street-vendor Kareish cheese, supermarket Kareish cheese, light Feta cheese, light processed cheese, light plain yogurt, packed and unpacked skimmed milk powder (30 of each) collected from supermarkets, hypermarkets, groceries, small dairies and street vendors in Alexandria City, Egypt. The samples obtained as sold to the public and transferred with a minimum delay to the laboratory to be examined.

The results can be summarized as follows:

7.1. Prevalence of *Salmonella* in examined skimmed dairy products samples

- *Salmonella* spp. could not be identified in all tested samples; hence all samples complied with Egyptian Standards.

7.2. Prevalence of *Escherichia coli* in examined skimmed dairy products samples

- The high prevalence of *E. coli* was detected in street-vendor Kareish cheese, and supermarket Kareish cheese by 56.67% (17/30) and 33.33% (10/30), respectively. Contrarily, the other examined skimmed products were free and fulfilled with the Egyptian Standards.

7.3. Prevalence of coagulase-positive *Staphylococcus aureus* in examined skimmed dairy products samples

- Coagulase-positive *Staphylococcus aureus* (CPSA) was identified in 6.67% (2/30), 6.67% (2/30), 6.67% (2/30), 0.0% (0/30), 3.33% (1/30), 3.33% (1/30) and 0.0% (0/30) in street-vendor Kareish cheese, supermarket Kareish cheese, light Feta cheese, light processed cheese, light plain yogurt, packed and unpacked skimmed milk powder, respectively with overall prevalence 3.81 % (8/210). All the examined positive samples did not comply with the Egyptian Standards.
- Staphylococcal enterotoxigenic genes (*seb*, *sed*) were not detected in all isolates.

7.4. Prevalence of Methicillin-resistant *Staphylococcus aureus* (MRSA) in examined skimmed dairy products samples

- Methicillin-resistant *Staphylococcus aureus* (MRSA) was identified in 6.67% (2/30), 6.67% (2/30), 3.33 % (1/30), 0.0% (0/30), 3.33% (1/30), 3.33% (1/30) and 0.0% (0/30) of street-vendor Kareish cheese, supermarket Kareish cheese, light Feta cheese, light processed cheese, light plain yogurt, packed and unpacked skimmed milk powder, respectively.
- All MRSA isolates showed multidrug resistance for at least four antimicrobial agents.

7.5. Prevalence of *Listeria monocytogenes* in examined skimmed dairy products samples

- *L. monocytogenes* could not be detected in all examined skimmed dairy products samples consequently, all examined samples were fulfilled with the Egyptian Standards.

7.6. Prevalence of *Bacillus cereus* in examined skimmed dairy products samples

- *B. cereus* could identify only in 3.33% (1/30), 6.67% (2/30) and 3.33% (1/30) of examined Feta cheese, packed and unpacked skimmed milk power, respectively, while could not be identified in other tested products. All positive examined samples were not fulfilled with the Egyptian Standards.
- *B. cereus* virulence genes (*hbl*, *cytK*, *ces*) were not identified in all tested isolates.

7.7. Prevalence of *Clostridium perfringens* in examined skimmed dairy products samples

- *C. perfringens* failed to be detected in all examined skimmed dairy products samples. All examined samples complied with the Egyptian Standards.

7.8. Antimicrobial activity of Ethanolic Extracted Propolis (EEP)

- EEP possesses high antimicrobial activity against Gram-positive bacteria (*S. aureus*, *B. cereus*) than Gram-negative ones (*E. coli*).
- EEP is highly effective against multidrug-resistant *Staphylococcus aureus*.