# CONTENTS


Page

**-INTRODUCTION** ..... **1**

**-REVIEW OF LITERATURE:** ..... **3**

**1- Bacillus cereus**

A-Characteristics. ..... 3

B-Cultural media. ..... 6

C-Sources of contamination. ..... 7

D-Incidence. ..... 9

E-Economic significance. ..... 18

F-Public health significance. ..... 20

G-Control ..... 24

**2- Clostridium perfringens** ..... **25**

A-Characteristics ..... 25

B-Cultural media ..... 26

C-Sources of contamination. ..... 27

D-Incidence ..... 28

E-Economic significance ..... 33

F-Public health significance ..... 34

G-Control ..... 36

**- MATERIAL AND METHODS** ..... **39**

- **Collection of samples** ..... **39**
- **Preparation of samples.** ..... **39**

A-Cheeses

B- Milk powder

Page

- **Bacteriological examination** ..... **39**

A- Isolation and enumeration of B.cereus. ..... 39

B- Identification of isolated B.cercus. ..... 40

C- Enumeration of total Cl.perfringens count ..... 43

D- Identification of Cl. perfringens. ..... 43

**-CULTURAL MEDIA AND REAGENTS** ..... **45**

**-RESULTS** ..... **53**

**-DISCUSSION** ..... **60**

**1- Bacillus cereus.** ..... **60**

A-Damietta cheese ..... 60

B-Hard cheese (Ras) ..... 61

C-Milk powder ..... 62

**2-Clostridium perfringens** ..... **65**

A-Damietta cheese ..... 65

B-Hard cheese (Ras) ..... 66

C-Milk powder ..... 66

**-APPENDIX** ..... **68**

**-CONCLUSION** ..... **70**

**-SUMMARY** ..... **72**

**-REFERENCES** ..... **74**

**-ARABIC SUMMARY**

# SUMMARY

A total of 180 random samples of Damietta cheese (80), Ras cheese (50) and milk powder (50) were collected from dairy shops and supermarkets at Damietta city to determine the incidence and counting of Bacillus cereus (vegetative and spores) and Cl. perfringens. The results obtained were summarized as follows:

***I- Bacillus cereus (vegetative cells):***

B.cereus(vegetative cells) was detected in 57.5%, 40% and 10% of the examined samples of Damietta cheese, hard cheese (Ras) and milk powder respectively with mean counts of $11.76 \times 10^2$; $4.90 \times 10^2$ and $2.20 \times 10^2$ c.f.u/g, respectively. The highest frequency distribution (71.7% , 85% and 100% ) lied within the range of $10^2 - <10^3$, in all the examined samples.

***II- Bacillus cereus spores:-***

Bacillus cereus spores was detected in 22.5 % ; 30% and 22% of the examined samples in examined samples of Damietta cheese, hard Ras cheese and milk powder respectively, with mean counts of $1.89 \times 10^2 \pm 0.293 \times 10^2$ ; $4.4 \times 10^2$ and $5.73 \times 10^2$ c.f.u /g respectively. All the positive samples of Damietta cheese, 80% of hard cheese (Ras) and 81.8 of milk powder samples lie within the range of $10^2 - <10^3$ .

***III- CL - Perfringens:***

CL. perfringens was isolated from 17.5% , 20% and 16 % of the examined samples of Damietta cheese, Ras cheese and milk powder respectively, with mean counts of $1.64 \times 10^2$, $1.40 \times 10^2$ and $1.75 \times 10^2$ c.f.u/g, respectively .

The highest frequency distribution (57.1% , 60% and 50%) lie within the range of $10^2 - 2 \times 10^2$ c.f.u/g in all examined samples .

The public health importance and the economic significance of existing Bacillus cereus and Cl. perfringens as well as suggested measures for improving the quality of raw milk and its products have been discussed.