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Molecular Detection of Enterotoxigenic *B.cereus* isolated from raw milk and milk products

Thesis
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CONTENTS

List of Figures

List of Tables

List of abbreviation

Abbreviation	Mean of Abbreviations
BAM	Bacteriological Analytical Manual
cspf	Cold shock protein
ces	Cereulide
cytk	Cytotoxin
hlb	Haemolysin BL
ISO	International Organization for Standardization
MYP	Mannitol Egg Yolk Polymyxin
nhe	Non-haemolysin enterotoxin
NCCLS	the National Committee for Clinical Laboratory Standards
PCR	Polymerase chain reaction

Summary

Bacillus species are known in the dairy industry for their harmful effects concerning food safety and product quality. *B.cereus* produces several types of enterotoxins that cause food poisoning resulting in diarrhea and emesis .Therefore this study was applied to investigate the prevalence of *B.cereus* in cow's raw milk and milk products Furthermore, it aimed to investigate the presence of virulence genes encoding for diarrheal type and emetic type food poisoning.

In the present study 100 samples of raw milk, ice cream and kareesh cheese were collected from different seller in Aswan city the collected samples were tested for presence of *B.cereus* and their enterotoxin genes.

The incidence of *B.cereus* in the examined samples were 34% according conventional methods. Further identification was done by PCR technique which confirmed the existence of *B.cereus* DNA in all tested isolates by using specific primer for *cspf* gene.

In addition, 3 enterotoxin genes (*hlb*, *nhe and cytk*) were detected by different percentage in *B.cereus* isolates by multiplex PCR as following; *nhe* gene (53%), *hbl* gene (47%) (33%).While *ces* gene not detected in isolates.

The antimicrobials susceptibility of *B.cereus* isolates according to the disc diffusion method showed that most tested isolates were resistant to penicillin, amoxicillin, neomycin,clarithromycin while other tested isolates were sensitive to chloramphenicol, streptomycin, erythromycin, gentamycin,ciprofloxacin,vancomycin and oxytetracycline.

The previous result cleared that:

-The occurrence of *B.cereus* in food is a major cause of concern for human health. So; the identification of this strain should be used as a part of a threat in the microbiological analysis.

-The PCR technique was the most rapid, reliable and accurate tool for detection and studying of the surveillance of food borne pathogens and their virulence genes such as *ces*, *hlb*, *nhe*, and *cytk* in *B.cereus*.

-Isolation of *B.cereus* strains harboured different toxigenic genes from milk, kareesh cheese and ice cream was considered a major cause of food poisoning.