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Molecular Characterization Of *Bacillus* Species Isolated From Some Foods

A thesis Presented By

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7. Summary

A total of one hundred random samples of meat and chicken products which including frozen Rice kofta, frozen Kobiba-shami, Chicken pane and Chicken nuggets (25 of each) were collected from different shops, supermarkets and hypermarkets in different localities in Menoufia and Kalyobia governorates. All collected samples were kept in separate plastic bags and transferred directly to the laboratory in an ice box with a minimum time of delay and analyzed as rapidly as possible. Each sample was subjected to bacteriological examination for detection of *Bacillus* species.

The result revealed that incidence of *Bacillus* species was higher in Chicken pane (76%) then Chicken nuggets (64%) then Rice kofta (48%) and lowest incidence in Kobiba shami (36%).

The suspected colonies were examined under microscope and biochemically and for more identification used VITEK 2 Compact system.

In kobiba shami *B. cereus* (66%), *B. polymyxa* (22.2%) and *B. licheniformis* (11%).

In Rice kofta *B. cereus* (50%) *B. polymyxa* (25%) and *B. licheniformis*, *B. macerans*, *B. mycoides* (8.3% for each one).

In chicken nuggets *B. cereus* (25%), *B. polymyxa*, *B. licheniformis* (12.5% for each one), *B. mycoides* (6.25%), *B. sphaericus* (31.25%) and *B. thuringnesis* (12.25%).

In chicken pane *B. cereus* (26.3%), *B. polymyxa*, *B. mycoides*, *B. sphaericus* (21% for each one) and *B. thuringnesis* (10.5%).

Isolates of *B. cereus* were tested for antimicrobial susceptibility testing. The most common drug resistance was to penicillin, amoxicillin and amoxicillin+clavulanic. On the other hand *B. cereus* was completely

susceptible to vancomycin and gentamycin (100% for each). All *Bacillus* species (*B. mycoides*, *B. sphaericus*, *B. licheniformis* and *B. polymexia*) that isolated were all highly resistant to penicillin, Amoxicillin, Amoxicillin + clavulanic acid at 100% and all highly sensitive to vancomycin at a percent of 100 except *B. polymexia* at 57%.

By using polymerase chain reaction (PCR), 100% of tested *B. cereus* isolates harbored *groEL* gene at 533bp, *nhe* gene at 760 bp, *cytK* gene at 421bp and *bla* gene at 680bp and only 10% of tested *B. cereus* harbored *hbl* gene at 1091bp.