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Bacteriological studies on some molluscus

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Abstract

A total of 100 samples of bivalve molluscus was subjected for enumeration, isolation and identification of *Staphylococcus aureus,* total coliforms, faecal coliforms and *Escherichia coli.* Sixty one strains of *S. aureus* were isolated, 20 strains from each yellow and black Gandoufly and 21 strains from Om El-Kholoul. While 36 strains of *E. coli* were isolated 13 strains from yellow Gandoufly, 12 strains from black Gandoufly and 11 strains from Om El-Kholoul. All *S. aureus* isolates were coagulase positive. The antimicrobial sensitivity test revealed that all the *S. aureus* isolates were 100% sensitive to rifampicin, vancomycin, cephalexin, cephataxime, chloramphenicol, kanamycin, neomycin, amikacine, spiramicin, gentamicin, ciprofloxacin, enrofoxacin, ofloxacin, oxacillin, cloxacillin, amoxy-clavulinic acid and ampicillin. Mean while they were100% resistant to pefloxacin and flumequine, and 92%to streptomycin. While the *E.coli* isolates were 100% resistance to ampicillin, amoxicillin and streptomycin, 50% to trimethoprim-sulfamathoxazole, lincomycin, neomycin and pefloxacin. Mean while they were 100% sensitive to ofloxacin, enrofloxacin, gentamicin, spiramicin and amikacin, 93.3, 90, 90, 83.3, 80, 80, 76.6, 63.3 and 60% to cephataxime, cephalexin, amoxy-clavulinic, chloramphenicol, tetracycline, kanamycin, flumequine, ciprofloxacin and erythromycin respectively.

Key words: Bivalve • *S. aureus* • *E. coli* • Antimicrobial sensitivity

To the soul of my father

To My mother, my husband and my little daughters

(Mai and Yara)

My dearest friend Abeer

My sisters and brother

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APHA	American public health association
AOAC	Association of official analytical chemists
BGLB	Brilliant green lactose bile
CFU	Colony forming unit
CLSI	Clinical and Laboratory Standards Institute
E. coli	*Escherichia coli*
FAO	Food and Agriculture Organization
ICMSF	International Commission on Microbiological Specifications for Food
MPN	most probable number
S. aureus	*Staphylococcus aureus*

1. Introduction

The biological class of Bivalvia contains more than 20,000 species of marine and fresh water molluscus, including mussels, oyster and clams. These molluscus are commonly called bivalves. One of the distinguishing characteristics of this class is the presence of lamillibranch gills, which allow filter feeding **(Villee *et al*., 1978).** During filter feeding, large volumes of water pass across the gills to allow the shellfish to obtain oxygen and food. Particulate matter from the water, including microorganisms is trapped in the mucus on the gills and transported to the mouth by ciliary action **(SITO, 2005).**

Numerous studies have shown that shellfish rapidly accumulate microorganisms if they are present in polluted water **(Eyles, 1980; Rose and Sobsey, 1993 and Lees, 2000).** It is fairly well established that bacteria can be removed from shellfish by placing them in clean water under specified environmental conditions in a process known as depuration **(Richards, 1988).** Eventually scientists began to understand the combined effects of bivalve filter feeding and environmental pollution on shellfish food safety, and today raw molluscan shellfish receive the second highest hazard rating of all foods **(ICMSF, 1978).** Temperature abuse during raw seafood harvesting and storage may help in microbial pathogens multiplication, thus posing a potential health threat to susceptible consumers **(Liston, 1990).**

Bivalves are regarded as potentially hazardous foods because of their inherent tendency to bioaccumulate pathogenic bacteria through filter feeding **(Hatha *et al*., 2005).** Seafood borne diseases associated with consumption of shellfish are the major challenge to the food hygienists in the 21st century, especially in the costal cites-Egypt.
Good hygienic conditions prevent the cross-contamination from raw food to other food, clean disposable gloves were used during shellfish handling and thorough cooking of shellfish must be adopted to control the hazard of seafood-borne pathogens **(Ali and Hamza, 2004).**