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## ***CONCLUSION AND RECOMMENDATIONS***

The obtained results in the presented study declared that *Listeria* species were contaminated raw fresh water fish including (cat fish and Tilapia), Marin water fish (Mossa and Morgan fish), processed fish including salted fish, (normal fesseikh, light salted Fesikh, normal sardine and light salted sardine) smoked fish and shellfishes (Crab and Shrimp) with various percentage. Which identified to *L. monocytogenes*, with *L. innocua*, *L. wlshemeria*, *L. grayi*, *L. seelegri* and *L. ivanovii*.

Catfish were showed highest incidence of *Listeria* among raw fish examined sample, meanwhile light salted sardine showed the highest one among processed fish shrimp harbored *Listeria* double to that by crab in shell fishes.

All isolated *Listeria monocytogenes* were pathogenic to white mice and 36% were identified serotype 4b.

Lactic acid dipping was found to be effective in inhibiting the growth of *Listeria monocytogenes* than acetic acid. Acidified sodium chloride (ASC) was found to be effective in habiting the growth of *L. monocytogenes*.

The following suggestion should be considered to safeguard consumers from being infected with *Listeria monocytogenes*.

(1) Monitoring verification program for *Listeria monocytogenes* in fresh fish, processed fish and shellfishes.

- (2) Measures to exert control over *Listeria* contamination of the processing plant and its impact upon subsequent finished product contamination should be developed.
- (3) Implementation of good manufacturing practices, standard sanitation, operating procedures and hazard analysis and critical control points (HACCP) program.
- (4) Local regulation and specified bacteriological standards should be postulated.
- (5) Education programs and health education should be imposed for these concerned in production and handling.
- (6) Application of lactic acid or acetic acid or acidified sodium chloride (ASC) on fish decontaminates process by manual and industrial methods are necessary to add a degree of safety regarding the food borne listeriosis.

## ***SUMMARY***

A total of 270 sensory evaluated and accepted out of collected 300 fish samples representing 100 raw fish {50 fresh water fish (25 each of catfish "*Clarias lazera*" and *Tilapia* species) and marine fish (25 each of *Moussa* "*Solea Spp.*" and Morgan "*Pagrus Spp.*" fishes)}, 120 processed fish (20 each of normal salted fesseikh and sardine, lightly salted fesseikh and sardine, hot and cold smoked herring fish), beside to 50 samples from shell fishes (25 each of crab "*Neptunus pelagicus*" and shrimp "*Paneus japonicus*") were randomly collected well identified packed in sterile plastic bags then immediately transferred to the laboratory where they were sensory evaluated and bacteriologically screened for the presence of *Listeria Spp.* in addition, improvement of *L. monocytogenes* occurrence was carried out.

The obtained results revealed that 90% of the collected samples were accepted organoleptically according to sensory evaluation.

The results of bacteriological examination declared that 17%, 19.6% and 24% of fresh fish, processed and shell fishes were contaminated by listeria respectively with overall percentage 19.25%.

Concerning *L. monocytogenes* it is evident that 4%, 3.3% and 6% of the same examined fish samples were positive for such organisms it is evident that *L. monocytogenes* with higher in lightly salted sardine samples 15% followed by shrimp samples (12%) then catfish 8%, light salted fessikh (5%), while tilapia and morgan fish species had the lowest isolation rate (4%).

On the other hand the result proved that 4 (36.4%) belonged to serovar 4b while the rest number 7 (63.6%) were untypable after their serological identification.

In addition all tested listeria monocytogenes strain have a lethal effect white mice at the 3<sup>rd</sup> & 4<sup>th</sup> day of intraperitoneal inoculation consequently the organism was re-isolated from the internal organs of the died mice using pathogenicity test.

For controlling, the occurrence of *L. monocytogenes* some antimicrobial chemicals were used to obtain results declared that the treatment of experimentally contaminated smoked fish samples with acetic acid (3%), lactic acid (2%, 3%) or acidified sodium chloride (50ppm or 100ppm) by dipping for one minute greatly reduce the number of listeria monocytogenes in the examined samples with percentage ranged from 98.9% to 100%.

The public health importance of listeria especially *L. monocytogenes* as well as the sanitary measure for improving fresh fish processed and shell fishes were discussed.

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