Microbial Safety of Oysters (*Crassostreamadrasensis*) Harvested from Kalpitiya Lagoon in Sri Lanka

G.L.A. Subhashini[1], K.W.S. Ariyawansa[2*], P.H. Ginigadderage[2], K.S. Hettiarachchi[2] and C.N. Walpita[1]

[1] *Sabaragamuwa University of Sri Lanka, PO Box 02, Belihuloya. 70140. Sri Lanka.*

[2] *National Aquatic Resources Research & Development Agency, Crow Island, Colombo 15. Sri Lanka.*

**** Corresponding Author: sujeewa@nara.ac.lk***

Introduction

Oysters are a nutritious sea food item, which is consumed predominantly in raw form and to a lesser extent cooked. Due to the filter feeding habit and living habitat in the estuary, they are concentrating and accumulating pathogenic microbes and toxic chemicals. Hence, subjected to stringent food safety standards are considered as a good income source for fishers. Kalpitiya lagoon in Sri Lanka has been identified as a potential site for oyster culture and farming has already commenced. If these farms are to produce oysters for local or export market, they should be in compliance with the microbial standards. The aim of the present study was to evaluate the microbial quality of the oysters harvested from two major areas of Kalpitiya lagoon,*viz.*Kandakuliya and Gangewadiya.

Research Methods

Five oyster samples were collected from each site attwo week intervals for three month period during December 2015 and January 2016. Total bacterial counts (TBC) (n=30), total coliforms (n=30), faecal coliforms (n=30) count and *E. coli*(n=30) were used as indicators to compare with the stipulated microbial standards by European regulations. At the same time, water samples were collected and salinity and temperature were measured. Total bacterial counts were enumerated using ISO 4833-1:2013 method. *E. coli* were tested using ISO 7251:2005(E) method. Total coliforms were enumerated at 36 ^{0}C using ISO 4831:2006 method.

Results and Discussion

Results indicated that the TBC of samples ranged from 2.2 x 10^3 to 3.5 x 10^5 CFU/g and it was below the standard limit of European regulations (5 x 10^5 CFU/g). All the samples collected from both sites of Kalpitiya lagoon during experimental period were positive for coliform bacteria, which ranged from 2.3 to 1.1 x 10^3 MPN/g. During December samples from both sites showed higher counts for coliform than the standard limit of European regulation (100 MPN.g^{-1}). All samples except from Kandakuliya in January and Gangewadiya in February showed presence of *E. coli* more than the acceptable limit of European regulations (2.3 MPN/g of). There was no correlation between TBCof oyster samples with salinity (r = -0.4371, P =0.4617) and temperature (r = 0.80750, P =0.1925) of tested water samples.

Results indicated that most of the samples were contaminated with *E. coli* exceeding the safety level for raw consumption of oysters according to European standards. According to obtained results oyster harvesting area in Kalpitiya lagoon can be classified as class B as per European shell fish harvesting area classification criteria.

Conclusion

Hence, it can be concluded that the oysters from these areas during the experimental period go beyond the level of microbial safety standards, showing the need of depuration or cooking by approved methods before consumption.

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