

Microbiological quality of water from Puttalam Lagoon to find suitability for natural relaying of bivalves

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Bivalve molluscan shellfish feed by filtering large volumes of seawater and accumulating food particles from their surrounding environment. When that environment is contaminated by sewage, shellfish will also accumulate human pathogenic bacteria and viruses during filter-feeding and will present a health risk when consumed raw or lightly cooked. In order to render such shellfish fit for consumption three principal commercial treatment processes have been traditionally used. One process is relocating the shellfish harvested from polluted areas to clean areas (areas free of microbiological contamination) to allow shellfish to cleanse or purge themselves by continuation of their normal filter-feeding and digestive processes. Puttalam Lagoon in Sri Lanka has been identified as a potential site for culturing of bivalves and culturing of oyster has already commenced. The aim of the present study was to evaluate the suitability of Puttalam Lagoon in Sri Lanka for natural relaying of oyster by means of microbiological quality. During the study period 104 water samples were collected from 12 sampling points of the lagoon from January 2017 to March 2019. Total Bacterial Counts (TBC) of tested water samples ranged from 10^1 - 10^3 CFU/mL. All samples were absent for *Salmonella*, *Vibrio cholerae* and *Vibrio parahaemolyticus*. Salinity of water ranged from 34 to 45 ppt whereas pH ranged from 6.34 to 8.48. Temperature ranged from 24 to 40 °C. There was no correlation between the salinity ($r=0.54312$ $p=0.4637$) and temperature ($r=0.4285$ $p=0.5281$) of water with total bacterial counts. 67% of samples were positive for total coliform bacteria and ranged from 2 to 225 MPN/100mL while 43% of samples were positive for faecal coliforms and ranged from 2 to 65 MPN/100 mL. *E. coli* was detected only in 32% of samples and ranged from 2-45 MPN/100 mL. It indicated all 12 sampling points were complied with US FDA restricted areas classification standards for microbiological quality and are suitable for natural relaying of bivalves.

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