MICROBIOLOGICAL QUALITY OF SHRIMP *Penaeus monodon* IN RELATION TO PHYSICO-CHEMICAL FACTORS IN WATER SOURCES

K.W.S. Ariyawansa*, U. Samarajeewa, S.P. Jayasooriya
National Aquatic Resources Research & Development Agency
Crow Island, Colombo 15.
Sri Lanka.

Culturing of shrimp, *Penaeus monodon* in natural waters make them more prone to contamination by pathogenic microorganisms. The prevalence of the pathogenic bacteria, *Salmonella, Vibrio cholerae, Vibrio parahaemolyticus*, total coliforms, faecal coliforms and *Escherichia coli* in water samples from water sources (Dutch canal and Mundal lake) for shrimp farming were determined. Salinity, pH and suspended solids in water were estimated. The impact of pH and salinity on the growth of pure isolates of *V.parahaemolyticus*, *E. coli* and *Salmonella* were examined. The combined effect of salinity and pH on the survival of *Salmonella spp.*, *E.coli* and *V. parahaemolyticus* was determined.

Water samples were collected from six sampling points. The total colifom count of water varied between 11 to 1800 MPN/100ml. The faecal coliforms and E.coli were between 2 - 175 MPN/100ml and 0-95 MPN/100ml respectively. *Salmonella arizonae* was observed in one occasion while *V.parahaemolyticus* observed in two occasions at the population of 10^1 cfu/g. The physicochemical parameters varied among sampling points monitored. Total coliforms, faecal coliforms and *E. coli* were isolated from waters at salinities ranging from 8 to 37 ppt with the majority of samples from 14 to 28 ppt range. Total coliforms, faecal coliforms and *E. coli* were observed mostly in water samples with pH values and suspended solid levels ranging from 7.9 to 10.0 and 50 to 98 mg/l respectively. The highest population of total coliforms was recorded in water with low salinity (8 ppt) and pH (8.2).

Growth of *V. parahaemolyticus*, *Salmonella* and *E. coli* was observed at 5–100 ppt, 5-40 ppt and 2-65 ppt salinity levels and pH range of 3.0-10.5, 3.5-9.8 and 3.5-10.3 respectively under experimental conditions.

There was no growth of *E. coli* when the salinities were 35 and 40 ppt and pH values were 9.0 and 9.5. The least growth of *Salmonella spp.* was observed when the combination of salinity level was 40 ppt and pH values were 9.0 and 9.5. Higher growth of *V.parahaemolyticus* has been observed at all combinations of salinities ranging from 15 to 40 ppt and pH 7.5-9.5. The growth was optimum at salinity level of 40 ppt and pH 7.5-9.5.

Physico-chemical parameters of water used for shrimp farming in Dutch canal and Mundal lake provide favourable conditions for the growth of *Salmonella spp., V. parahaemolyticus*, Coliforms, Faecal coliforms and *E. coli*.