M.S.73. BRIGHT SINGH, I.S.–Studies on the Bacteria Associated with Penaeus Indicus in a Culture System-1987– Dr.D. Chandramohanan and Dr. P. Lakshmana Perumal Swamy

The thesis deals with the quantitative and qualitative aspects of the heterotrophic bacteria associated with eggs, nauphii, zoea, mysis and post larvae in hatchery; juveniles and adults in a culture pond and post larvae, juveniles and adults in their natural habitat.

In hatchery, it has been observed that THB declined as the eggs hatched out and nauplii metamorphosed to post larvae through zoea and mysis. An increase in the percentage occurrence of *Vibrio* and the declining in generic diversity indices were the other prominent bacteriological changes taken place in eggs and larvae as well as in water during the rearing period. During the early stages (eggs and nauplii) *Pseudomonas* and *Acinetobacter* were dominant.

The study reveals that the *Vibrio* are active hydrolytic enzyme producers including chitinase. Similarly, higher temperature prefering Vibrios were also associated with post larvae.

In culture pond, the genera encountered with juveniles *Vibrio, Pseudomonas, Maraxella, Microcoreus, Bacillus* and coryneform group and with water *Vibrio, Pseudomonas, coryneform group, Moraxilla, Acinetobacter* and Enterobacteriacea, in the decreasing order of dominance. The stomach content showed a higher bacterial population than the surface sediment with more *Vibrio* and *Pseudomonas* where as in sedimant *Bacillus* and coryneform groups were dominant. Heterptrophic bacteria was found to be increasing in the intestine as the food passed through the alimentary canal. Besides in the intestine the percentage of *Vibrio* was double the percent seen in stomach. This investigation shows that the micro-environment of prawn alimentary canal is highly suitable for *Vibrio*, where it undergoes a few cycles of division.

Proteolytic and amylolytic bacteria were found to be dominant in happa as well as in culture pond. Majority of isolates of *Vibrio* elaborated chitinase.

Hiterotrophic bacteria exhibited a shift in the requirement of NaCl from 7 to 1% from the day of stocking to the time harvest. However, majority of *Vibrio* from the alimentary canal of prawns preferred 7% NaCl as optimum.

In the natural environment, a significant increase of the total heterotrophic bacteria and a remarkable generic shift leading to the dominance of *Vibrio* could be seen in post larvae, juveniles, adults, water and sediment from November to

May. Stomach content of adults harboured a higher bacterial population than surface sediment and exhibited *Vibrio* as the dominant genus indicating the animals selective feeding behaviour.

Majority of isolates were proteolytic followed by lipolytic; amylolytic and chitinolytic. The only dominant group which produced chitinase was *Vibrio*.

While majority of the isolates fall under the group preferring NaCl concentrations ranging from 1-3%, a considerable percentage preferred to grow at 7 to 10% NaCl.

Bacteria which could grow to maximum at a temperature ranging from 10 to 50°C could be isolated. It can be concluded that diverse physiological groups of bacteria with various optimal conditions for maxmimum growth exist together.