1. INTRODUCTION

Fish and fishery products have become not only a major source of protein for the ever-increasing human population but also a source of employment for millions and an item to generate immense wealth to nations. In the declaration on World Food Security adopted by the World Food Summit held in Rome in November 1996, fisheries was identified as an important sector to provide food security for the present and future generations.

The world fish production has reached 9,31,90654 mt (Anon, 2002). It is estimated that about 44\% of the world marine stock is heavily to fully exploited leading to the fear that world fisheries is on the brink of disaster (Mace, 1997). Some of the species are exploited to the maximum and some are over exploited indicating the need for resource conservation for sustainable fishery.

India is the eighth largest fish producer contributing a share of 4.0\% to the world fish production (Anon, 2002). The Indian subcontinent with a total land area of 3.3 million km$^2$ and a coastline of 8041 km is blessed with marine wealth. India has the strategic advantage to exploit the marine resources compared to other countries bordering the Indian Ocean, and contributes about 45\% of the fish production from the Indian Ocean (Shahul, 1998). Exclusive Economic Zone (EEZ) of India covers an area of 2.02 million sq. km, with an estimated harvesting potential of 3.9 million t per annum (Upare, 2003). Of this, nearly 50\% is reported to be available in inshore areas and the balance in the offshore and the deep sea areas (Upare, 2003).

Export of marine products constitutes a major revenue earning source from agriculture products and it constitutes approximately 3.6\% of the total exports from India and 16\% of the total agricultural products (Upare, 2003). Export of fish and fishery products from India commenced in 1953 with the export of small consignment of frozen shrimp from Cochin. In those days, there were only 3 or 4 exporters in the field and volume of export was too small fetching foreign exchange less than 2 crores. At present there are over 400 exporters in the
country with the total value of exports crossing Rs.7,011 crores (Anon, 2002). Quality control and pre-shipment inspection system was instrumental for this phenomenal growth of the seafood industry. European Union and the United States of America made the quality assurance of food products very stringent and evolved quality assurance programmes based on Hazard Analysis Critical Control Point (HACCP) concept. The Government of India therefore reviewed the existing exporting inspection systems and introduced a new HACCP based quality assurance and monitoring systems (QAMS) for fresh, frozen and processed fish and fishery products with effect from August 21, 1995 in line with the requirements of the major importing countries (Shrivastava, 1998).

Safety of seafood and consumer health is of paramount importance. There is a need to improve the quality and safety of seafood products in the international market as well as for domestic trade. Due to the stringent quality control measures adopted by the importing countries, quality of seafood meant for export need prime importance. Developed nations are very much concerned over the safety of food items which may contain pathogenic microorganisms, pesticide residues, harmful chemicals, heavy metals, biotoxins etc., causing health hazards.

Marine occurring vibrios in addition to V. cholerae have emerged as significant human pathogen in recent years and 11 species have been documented to cause disease by consumption of raw or improperly cooked seafood or via wounds acquired in the marine environment (Janda et al., 1988). Presence of HPVs (HPVs) in seafood meant for export caused concern during the past two decades. Recently few consignments of frozen fish exported from this country suffered rejection due to the presence of HPVs, viz. V. parahaemo-lyticus. To meet the global requirements in seafood trade, it is necessary to produce safe and high quality products. With the implementation of EU directives (No. 91/493/EEC) and the US regulation it has become mandatory to monitor the levels of various hazards in seafoods.

Halophilic vibrios are one of the major groups of bacteria found in marine and estuarine environment. It is therefore to be expected that freshly harvested finfish
and shellfish from these environments might be harboring some of the pathogenic halophilic Vibrio spp. Vibrios may cause a variety of diseases including gastroenteritis, wound infections, ear infection and septicemia. A number of halophilic Vibrio spp. viz. V. alginolyticus, V. cincinnatiensis, V. damsela, V. fluvialis, V. furnissii, V. hollisae, V. metschnikovii, V. parahaemolyticus and V. vulnificus are recognized as human pathogens (Dalsgaard, 1998).

HPVs usually encounters different adverse conditions in its native or food-processing environment and the stresses resulting from these conditions may affect the survival of this pathogen. In this regard studies were conducted in which the isolates of HPVs species like V. cincinnatiensis, V. fluvialis, V. furnissii and V. parahaemolyticus were subjected to different stresses, viz., survival at different processing steps like washing, chilling, freezing, blanching and drying. Viability of the above organisms, when exposed to different concentrations of sodium chloride, chlorine, chlorine dioxide and pH were studied. Antibiotic sensitivity and haemolytic activity of these isolates were also tested.

It is expected that the data generated will be useful for improving the processing strategies and enlarging the vision on the concept for high quality, safe seafood in the domestic as well as international trade.