

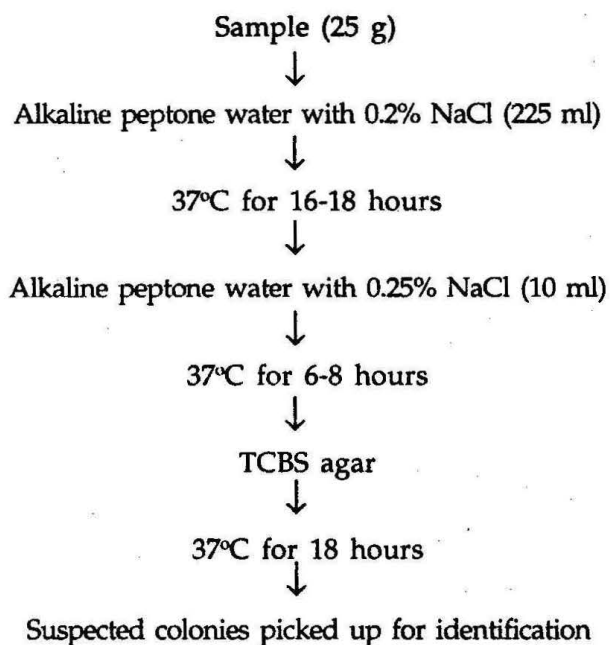
Pathogenic Vibrios Associated with Seafoods in and Around Kakinada, India

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Investigations on the prevalence of pathogenic vibrios were attempted in 129 samples of fresh, frozen and iced prawn and fish. Thirty percent of the prawn *Penaeus indicus* carried vibrio species comprising *Vibrio parahaemolyticus*, *V. vulnificus*, *V. metchnikovii*, *V. cholerae* Non 01, *V. anguillarum* and Group F vibrios. Maximum number of isolates were found to be *V. cholerae* Non 01. Incidence of pathogenic vibrios were lower in fish compared to prawn.

Fish and shellfish pick up vibrios from the environment in which they occur as well as during subsequent handling. According to Hackney & Dicharry (1988), out of 11 species pathogenic to human beings only 6 namely, *Vibrio cholerae*, *V. parahaemolyticus*, *V. vulnificus*, *V. mimicus*, *V. hollisae* and perhaps *V. furnisii* are associated with food-borne illness. Information on the occurrence of pathogenic vibrios from seafoods in this country are few (Chatterjee & Neogy, 1972a, Nair *et al.*, 1975, Natarajan *et al.*, 1979, Karunasagar *et al.*, 1987; Anon, 1988) and the present study was undertaken to obtain information on the prevalence of pathogenic *Vibrio* species in seafoods of this area, in respect of which, no information was available.

Eighty five samples of fresh, ten samples of frozen and four samples of iced *Penaeus indicus*, ten samples of fresh and twenty samples of frozen fish, collected from the local market and processing plants were employed for the study. *Vibrio cholerae* was screened by two methods viz., Madden *et al.* (1984) and the Tokyo quarantine station method which is as below.



For isolation of other halophilic vibrios, method of Twedt & Stelma (1987) was used. Identification of the suspected vibrio isolates was carried out according to Blake *et al.* (1980).

Thirty (30%) out of 99 samples of *P. indicus* contained vibrios. Out of 30 samples of fish examined, one fresh sciaenid and one frozen oil sardine revealed vibrios. Nair *et al.* (1975) reported vibrios from 38% of prawn samples while Chandrasekharan *et al.* (1984) isolated vibrios from 30.8% of samples of

fresh *P. indicus* and the findings in the present study are in agreement with the earlier observations. The number of fish samples employed in the present study are however too small to make any generalisation on the prevalence of vibrios in fish.

Species-wise distribution of vibrios among different types of samples of seafoods examined during the present study is presented in Table 1.

Table 1. *Vibrio* species isolated from different samples of seafood

Seafood	Samples examined	<i>V. parahaemolyticus</i>	<i>V. vulnificus</i>	<i>V. metchnikovii</i>	<i>V. cholerae</i> non 01	<i>V. anguillarum</i>	Group F vibrios
Fresh prawn (<i>P. indicus</i>)	85	5	4	4	15	1	1
Fresh fish	10	-	1	-	-	-	-
Frozen fish	20	1	-	-	-	-	-

None of the vibrios isolated in the present study were found to be *V. cholerae* 01. The rare presence of *V. cholerae* 01 in seafoods was well brought out in an earlier study (Anon, 1988) where *V. cholerae* 01 could be isolated only from 2 out of 2577 samples of seafoods.

Maximum portion (50%) of vibrios isolated from fresh *P. indicus* were Non 01 *V. cholerae*. In other words, 15 out of 99 samples of *P. indicus* harboured Non 01 *V. cholerae*. Non 01 *V. cholerae* from seafoods have been isolated earlier in this country (Chatterjee & Neogy, 1972 b; Anon, 1988). Non 01 *V. cholerae* reportedly cause outbreaks and sporadic cases of gastro-intestinal illness and less frequently extra intestinal diseases (Blake *et al.*, 1980, Colwell, 1984). Non 01 *V. cholerae* appear to be widely distributed in sewage, water, seafoods and animals.

V. parahaemolyticus was isolated from five samples of *P. indicus* and one sample of frozen fish. This organism has also been reported from seafoods earlier in this country (Chatterjee & Neogy, 1972 a, Nair *et al.*, 1975; Chandrabose & Chandrasekharan, 1976; Natarajan *et al.*, 1979, Nair *et al.*, 1980). Though *V. parahaemolyticus* is a common contaminant of seafoods, often present in high numbers, almost none of them was reported to be capable of causing

gastroenteritis in man (Fujino *et al.*, 1974; Hackney *et al.*, 1980). *V. vulnificus* was recovered from 4 samples of *P. indicus* and one sample of fresh fish. This is the first time that *V. vulnificus* has been isolated from prawns (*P. indicus*) in this country since the only earlier report of isolation of *V. vulnificus* was from molluscan shellfish (Karunasagar *et al.*, 1987). *V. vulnificus* is one of the most invasive species ever described (Oliver, 1985). Food borne infections occur after ingestion of contaminated seafoods and the organism penetrates the intestinal tract to produce primary septicaemia. *V. vulnificus* can also cause troublesome wound infections and seafood handlers are a vulnerable group. *V. vulnificus* is widespread in the environment and environmental isolates are indistinguishable from clinical isolates as they produce virulence factors identical to those of clinical isolates (Tison & Kelly, 1986).

V. metchnikovii, *V. anguillarum* and Group F vibrios were isolated from seafoods probably for the first time in this country, in the present study. It is not yet certain whether these vibrios are pathogenic to humans even though *V. metchnikovii* was isolated from human intestines (Lee *et al.*, 1978) and Group F vibrios were associated with cases of diarrhoea in Bangladesh in 1976-77 (Blake *et al.*, 1980).

Mesophilic vibrios present in the inshore marine environment and some fresh waters can cause disease in humans, the most important of them being *V. parahaemolyticus*, Non 01 *V. cholerae* and *V. vulnificus*. The nomenclature, classification and identification of species in the genus *Vibrio* is at the moment in a fluid state and some sort of an order is immediately needed. In view of their increasing aetiological role in food-borne illness throughout the world, more such studies on the monitoring of seafoods for vibrios are warranted.

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