Distribution and characteristics of *Vibrio vulnificus in Incheon Costal Area.*

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Vibrio vulnificus, a gram-negative,and estuarine bacterium commonly found in coastal water and in association with seawater, shellfish and fish. This bacterium is known to casuse septicemia and severe wound infections in patients with chronic liver disease or immuno-compromised condition. In this study, we investigated the distribution and characteristics of *Vibrio vulnificus* in Incheon Costal Area.

In this survey, total 6,571 samples were obtained from different sites of the Inchoen coastal area during the periods from 2003 to 2005. 1,272 strains were isolated from 6,571 samples by PCR using targeted the cytotoxin-hemolysin gene. The isolation rates of *Vibrio vulnificus* from sediment, seawater, raw seafoods and aquarium water were 40.6%, 25.9%, 5.7%, and 29.4%, respectively. The highest isolation rate was 31.8% in september 2005 and in spite of low temperature the isolation rate was 13.1% in November 2005.

These results show that the prevalence of *Vibrio vulnificus* was highest in the sediment among environment samples. Thus, we should recognize sediment plays role in as potential reservoir of *Vibrio vulnificus*

Distribution and characteristics of *Vibrio vulinificus* in Incheon Costal Area.

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Abstract

Background: *Vibrio vulinificus*, a gram-negative, and estuarine bacterium commonly found in coastal water and in association with estuarine water, shellfish and fish. This bacterium is known to cause septicemia and severe wound infections in patients with chronic liver disease or immuno-compromised condition. In this study, we investigated the distribution and characteristics of *Vibrio vulinificus* in Incheon Costal Area.
Method: In this survey, total 4,302 samples were obtained from different sites of the Incheon coastal area during the periods from 2003 to 2005. 310 strains were isolated from 4,302 samples by biochemical test. The isolation rates of *Vibrio vulinificus* from sediment, estuarine water and Fished & Shellfishes were 23.2%, 12.4% and 4.7%, respectively. The highest isolation rate was 31.8% in september 2005 and in spite of low temperature the isolation rate was 13.1% in November 2005.
Conclusion: These results show that the prevalence of *Vibrio vulinificus* was highest in the sediment among environment samples. Thus, we should recognize sediment plays role in as potential reservoir of *Vibrio vulinificus*

Introduction

Vibrio vulinificus, a gram-negative, and estuarine bacterium commonly found in coastal water and in association with estuarine water, shellfish and fish. This bacterium is known to cause septicemia and severe wound infections in patients with chronic liver disease or immuno-compromised condition. Primary septicemia usually occurs through ingestion of raw shellfish, especially oysters, by persons who are immunocompromised. Wound infections however, have been shown to occurs in otherwise healthy individuals who come in contact with this bacterium via contamination of a previously inflicted wound or one incurred in an estuarine environment. One of the main virulence factors associated with infection with *V. vulnificus* is an antiphagocytic, polysaccharide capsule, and encapsulated cells are highly virulent, with a 50% lethal dose of less than 10 CFU. The *V. vulnificus* endotoxin is also important in the virulence of this pathogen and the hypotension produced by this factor is eliminated when nitric oxide synthase is inhibited. In this report, we investigated the distribution and characteristics of *Vibrio vulinificus* in Incheon Costal Area, which were isolated from total 4,302 samples (sediment, estuarine water, fishes & shellfishes) in 2004~2006.

Methods

Fig.1. Schematic view of this study

Fig. 2. Sampling sites for the isolation of *V. vulnificus*

Results

1. We investigated, total 4,302 samples were obtained from different sites of the Incheon coastal area during the periods from 2004 to 2006. 310 strains were isolated from 4,302.
2. The isolation rates of *Vibrio vulinificus* from sediment, estuarine water and fishes & shellfishes were 23.2%, 12.4% and 4.7% respectively.
3. The isolation rates of *Vibrio vulinificus* were positively correlated with water temperature and negatively correlated with salinity.

Table 1. Isolation rates of *Vibrio vulnificus* in Incheon coastal area

Specimen	No. of sample (N)	No. of isolated (N)	(%)
Fishes &Shellfishes	3,256	153	(4.7)
Estuarin e water	792	98	(12.4)
Sediment	254	59	(23.2)
Total	4,302	310	(7.2)

Conclusion

These results suggest that the prevalence of *Vibrio vulinificus* was highest in the sediment among environment samples. Thus, we should recognize sediment plays role in as potential reservoir of *Vibrio vulinificus*

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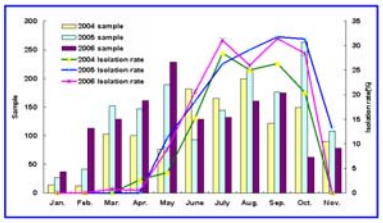

Fig.3. Isolation rates of *Vibrio vulnificus* during three years

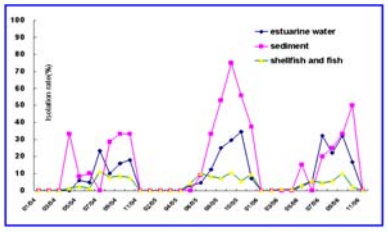

Fig.4. Isolation rates of *Vibrio vulnificus* from marine specimens

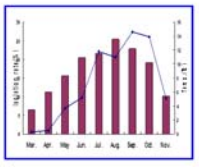

Fig.5. Correlation between isolation rates of *Vibrio vulnificus* and mean temperatures of estuarine water

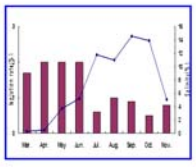

Fig.6. Correlation between isolation rates of *Vibrio vulnificus* and mean salinity of estuarine water

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