Seafood borne illnesses from *V. parahaemolyticus*, *V. cholera*, *V. vulnificus*, *Clostridium perfringens*, *Salmonella*, *Shigella*, Norovirus, Norwalk virus and Hepatitis A virus pose a health risk due to raw or partly cooked shellfish [1-5]. Oysters can accumulate bacterial indicator, pathogenic bacteria and other toxic substances and concentrate nutrients from the environment due to their filter feeding systems. In tropical area, suitable climate and fruitful nutrients create a great condition leading to high environmental biological and chemical accumulation. Season, temperature and relative humidity were influenced with the pathogen load in shellfish [6, 7]. Mathematical model focusing on environmental predictors is useful for monitoring the bacterial load in oyster and estuarine water.

Oysters and seawater were sampled for the analysis of total *V. parahaemolyticicus*, *V. cholera*, *Salmonella*, *Shigella*, total coliform and *E. coli*. Wind speed, temperature, relative humidity, harvesting time, location, distance from the ocean, rainfall, and tide were recorded monthly of each sampling time. The study examined the relationship between the concentration of *V. parahaemolyticicus*, bacterial indicators (coliform and *Escherichia coli*), and environmental factors influencing the contamination of oyster *Crassostrea gigas* and seawater. Fresh oyster meat (n=72) and seawater (n=48) samples were monitored from oyster-producing area located in the costal of Andaman sea in the Southern, Thailand between April and September, 2016. The bacterial accumulation was estimated at 3.82, 3.79, and 8.35 log10 MPN/gram of fecal coliform, *E. coli* and total *V. parahaemolyticicus*, respectively. The prevalence of *Salmonella* and *Shigella* was detected at 47.22% and 9.72% in oysters, respectively. The prevalence of *Salmonella* was reported in oysters higher than in water, while the distribution of *Shigella* was obviously found in seawater greater than in oyster meat.

The *V. parahaemolyticicus* were a strong positive correlation with the oyster harvesting time starting from April to September under a simple linear regression model with a regression coefficient at 85.9%. The quantitative significant environmental predictors from the oyster-producing farms were investigated in both oyster and seawater. Month of oyster harvesting (*p* < 0.0001), wind speed (*p = 0.022*), maximum wind gust (*p = 0.013*), relative humidity (*p = 0.021*), and the amount of fecal coliform (*p = 0.019*) were associated with the concentration of total *V. parahaemolyticicus* (MPN/gram) under the linear mixed-effect regression. Unlikely, location, the presence of *Salmonella*, and the concentration of *E. coli* and coliform played a major role in the persistence of the amount of Vibrio presenting in seawater (*p < 0.0001*). Thus, extensive research is recommended to understand the impact bacterial contamination of oyster and seawater which is essential for improve seafood quality and safety.

**Acknowledgements**

This research was supported the Faculty of Veterinary Science grant, Chulalongkorn University, Bangkok, Thailand (RG 17/2559). We thank Somporn Sarakarn for valuable suggestions and field sample collection, and Chilai Koowatananukul for laboratory assistance.

**References**