

# pH of Raw Oysters (*Crassostrea iredalei*) in Capiz, Philippines

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**Abstract-** This study was conducted at Mambusao, Capiz, Philippines, at DOST-VI, Iloilo Philippines last September 2011 to determine the pH value of raw oyster samples from selected outlets in Capiz. Raw oyster samples from Sapián, Ivisan and Roxas City outlets of Capiz were bought, extracted from its shell and frozen last September 6,13,20 and 27, 2011 and were then transported and subjected to pH analysis at Department of Science and Technology, Region VI Laboratory last September 7,14 ,21 and 28, 2011. The pH of raw oyster meat samples are within the microbial growth range for salmonella spp, staphylococcus aureus and Escherichia coli.

**Index Terms-** Raw Oysters, pH, Philippines

## I. INTRODUCTION

Seafood has traditionally been a popular part of the diet in many parts of the world and in some countries constituted the main supply of animal protein (FAO, 1994). In the Philippines, oyster (*Crassostrea iredalei*) is one of the famous seafood. There are at least 20 known provinces in the Philippines with established growing areas for shellfish. Province of Capiz is one of them specifically from the Sapián and Ivisan Bay.

However, oyster is a filter feeding bivalve molluscan shellfish wherein accumulation and concentration of bacteria and viruses from the environment is generally taking place (FAO, 1994). Bivalve molluscan shellfish are filter feeders, extracting marine algae, bacteria and nutrients from surrounding waters. Because of this, they are prone to contamination from the growing environment. Some pathogenic bacteria, especially *Vibrio* spp. are endogenous to aquatic environments and can survive and grow in oysters, presenting a risk to health if ingested (NSW Food Authority, 2009).

In the Philippines, oysters are known to be of poor sanitary quality. The report on quality has remained significant compared to the total exports in the world market, thus, they are usually distributed locally. Measures have not been adopted to ensure safety and wholesomeness of the shellfish products (SRDC, 1991 as cited by Miguel, 2000).

Oyster (*Crassostrea iredalei*) in Ivisan and Sapián Bay, Capiz, Philippines was collected and studied last September to December 2007 and was found to contain parasites such as *Nematopsis* sp. as the most prevalent parasite (71.33% and 65.0%) at 2 sites with a moderate intensity of infection. *Tylocephalum* sp. cestode was found in the connective tissue around the digestive gland, with a prevalence of 60% and 52.3% in 2 sites, with a moderate intensity of infection. Digenean trematodes had a 37.80% prevalence at site 1 and a 22.45%

prevalence at site 2. Ciliates were also observed with a prevalence of 18.75% (site 1) and 13% (site 2). The observed infection of oysters had no apparent effect on oyster production at these sites maybe due to low infestation levels or to the fact that the parasites have no pathological effect. (Erazo-Pagador, 2010). Raw oysters from outlets of Calumpang (Iloilo City, Philippines), Arevalo (Iloilo City, Philippines) and Miag-ao (Iloilo, Philippines) showed presence of salmonella spp, vibrio sp. and staphylococcus aureus in all samples. The pH of raw oyster ranges from 6.10 to 6.37 (Miguel, 2000).

Generally, in the Philippine setting, oysters from cultivation area are transported to outlets where it is sold in wholesale or retail basis before they are brought to public markets or restaurants, “carinderias”, and even in the outlets or “talabahan”. Oysters are consumed then as uncooked or partially cooked in which fresh oysters could be a potential vehicle of foodborne illnesses.

This study might provide baseline information to provide a link between the pH and future microbiological as well as physico-chemical studies related to fresh oyster in the Philippines.

## II. RESEARCH ELABORATIONS

Materials included the raw oyster meat samples, oyster knife, thermochase, ice, water, face mask, laboratory gown, thermometer, sterile plastic bags, 70% isopropyl alcohol, weighing scale, water containers and Lysol.

For the collection and transportation of samples, raw oysters were bought from the outlets of Ivisan (A), Roxas City (B) and Sapián (C) bays and were immediately transferred to Science laboratory building, Capiz State University, Poblacion Mambusao Campus. All samples were then opened immediately in that area on the day the samples were collected. From each source, 60 to 70 pieces of collected raw oysters were kept in clean sterile plastic bag that was placed in a bowl filled with ice (at a temperature of below 5°C). Each set of samples was labeled, carefully sealed and handled in order to prevent breakage of plastic bag and possible contamination of the sample.

For preparation for sample examination, proper sanitation and disinfection was observed before the preparation of the sample. Masks and laboratory gowns were then worn by the extractors. Any growth and loose materials from raw shell stock was scrapped off and washed under running water. The cleaned shell stock was drained after. Before removal of shell contents, the hands of the examiner was scrubbed thoroughly with soap and water and rinsed with 70% alcohol. The shell was opened with a knife and the meat obtained was quickly collected in

sterile plastic container and immersed in a bowl with crushed ice. After a 500 grams of raw oyster, was obtained, the sterile plastic container was immediately sealed and placed in freezer in order to be ready for transporting of the samples the next day at the pH analysis of oyster samples was done using Electrometric method conducted at Department of Science and Technology, Iloilo City, Philippines.

For statistical analysis, mean was used to determine the pH present in raw oysters at every sampling period at different outlets.

### III. RESULT OR FINDING

**Table 1. Ph value of raw oyster samples from Selected Outlets in Capiz, Philippines**

Period of Sampling	Sources		
	Ivisan	Roxas City	Sapian
Sept.6,2011	5.89	5.83	5.94
Sept.13,2011	5.93	5.88	5.70
Sept.20,2011	6.08	5.96	6.02
Sept.27,2011	5.94	5.88	5.81
Mean	5.96	5.89	5.87
<b>**Ph Growth Range of Some Pathogenic Bacteria (Jay, 1986).</b>			
<b>Pathogens</b>		<b>Ph Range</b>	
<b>Salmonella spp</b>		<b>4.5 to 9.0</b>	
<b>Staphylococcus Aureus</b>		<b>2.6 to 10.0</b>	
<b>Vibrio cholera</b>		<b>6.0 to 9.6</b>	
<b>Vibrio parahaemolyticus</b>		<b>5.0 to 9.6</b>	
<b>Escherichia coli</b>		<b>4.6 to 9.5</b>	

The ph of raw oyster ranges from 5.07 to 6.08. The ph of raw oyster from the three outlets are within the pH growth range

of salmonella spp, staphylococcus aureus, Vibrio parahaemolyticus and Escherichia coli.

### IV. CONCLUSION

The pH of raw oyster meat samples are within the microbial growth range for salmonella spp, staphylococcus aureus, Vibrio parahaemolyticus and Escherichia coli.

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