The Determination Prevalence of Salmonella in The Shrimp Supply in Khuzestan Province, Iran

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Abstract: *Salmonella* is one of the most important food pathogens and its different serotypes enter the body through food and makes food infections in consumers. In some countries, including Sweden and Canada ranked first among the bacteria that cause food infections. Accordingly, one of the most important problems shrimp and its products to be contaminated with *Salmonella*. In this study, 245 samples were taken randomly of the shrimp consumed in the Khuzestan province. Then samples sent to laboratories in an ice and positive cases of *Salmonella* contamination were found by using conventional culture methods (pre-enrichment, enrichment, culture stage in selective plating and biochemical culture) and then confirmed by serological tests. The total samples was assessed 33 samples was positive and 212 samples was negative for *Salmonella* and was determined 13.4% prevalence of *Salmonella* contamination of shrimp supply in Khuzestan Province.

Key words: *Salmonella* %Prevalence %Shrimp %Khuzestan Province

INTRODUCTION

*Salmonella* is a gram-negative, rod-shaped bacilli that can cause diarrheal illness in humans. *Salmonella* is a gram-negative, rod-shaped bacilli that can cause diarrheal illness in humans. Bacteria of *Salmonella* belongs to the Entrobacteriaceae family of which more than 2,600 serotype has been recognized. Today, *Salmonella* is one of the most important causes of food disease in the world and in some countries, it ranges first place among bacteria which causes food infections. Thus the determination prevalence of *Salmonella* can be used to evaluate the health status of shrimp consumed in Khuzestan Province that is the most important areas of shrimp and fishing the country. In this study, 245 random samples was taken from the shrimp consumed in the province and then samples sent to laboratories in an ice and immediately microbiological tests is done to determine the *Salmonella* contamination. In this way the sample placed in a sterile container containing media buffer peptone water and after shook a few times until rinse external surface of the shrimp and make good contact with medium and in the next step was found positive cases of *Salmonella* by using conventional culture methods (pre-enrichment, enrichment, selective solid culture and biochemical culture) and then confirmed by serological tests.

MATERIALS AND METHODS

During the months of August to late December 2011, 245 samples randomly collected from shrimp sales in Khuzestan province and immediately the samples was put into a pot containing ice and then sent to the laboratory for further examination where in less than 24 hours they follow were examined:

Shrimp Rinse: First 100 ml of buffer peptone water was added into the sterile container, then beside a suitable flame a shrimp (sample) into the container and it shake well for 3-2 minutes until rinse external surface of the shrimp and make good contact with medium. And then remove shrimp and thus rinsed shrimps were taken for microbiological tests [4].

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Determination Positive Cases of *Salmonella* Contamination: In order to determine contamination of sample with *Salmonella* follow were examined:

**Pre-Enrichment Stage:** Samples containing 100 ml of washing solution were kept for 24 hours at a temperature of 37°C [4, 5].

**Enrichment Stage:** After initial heating 0.1 ml of solution from each sample has been transferred to the pipette of 9/9 ml of Rappaport vasilidis broth (ratio of 1 to 100) and the pipettes kept in a place heated to 42°C for 48 hours [5].

**Culture Stage in Selective Plating:** Then take the tube out of the incubator and a certain volume of fluid from each tube was transmitted by the loop and transferred to plates containing selective solid media includes Macconkey agar and *Salmonella-Shigella* agar (ss) and were cultured linear method. Then the plates were kept for 24 hours at a temperature of 37°C. After this time *Salmonella* colonies in *Salmonella-Shigella* agar medium become more and more colorless with a blackish center and in the Macconkey medium small colonies and transparent with change color medium can be seen. With needle culture two or more of typical colonies suspected to *Salmonella* in *Salmonella-Shigella* agar and Macconkey agar taken and transferred into Agar brilliant green and Rambach agar and after the linear culture is done for a period of 24 hours in 37°C. Any suspected colonies to *Salmonella* in the brilliant green medium will turn pink and in Rambach, it turns red [6].

**Culture Stage in Bio-Chemical Medium:** Two or more suspected typical colonies of Brilliant green and Rambach agar medium with needle culture transferred to TSI (Triple sugar iron agar), LIA(Lysine iron agar), Urea, Citrate and SIM (Sulfide indole motility) and after insemination, it was placed in the incubator for 24 hours at 37°C [7].

**The Serological Tests Stage:** After 24 hours the biochemical medium will be checked and samples positive was diagnosed for *Salmonella* contamination to confirm diagnosis the serological were tested [8, 9].

**RESULTS**

245 samples, were assessed 33 samples positive and 212 samples negative for *Salmonella* contamination and was determined 13.4% the prevalence of *Salmonella* contamination (Diagram 1).

**DISCUSSION**

Despite efforts to raise food hygiene standards, statistics obtained from many countries around the world show Salmonellosis disease steadily been rising and the *Salmonella* infection is the most widespread bacterial infections, that the most important way that its transmission is the consumption of food contaminated with *Salmonella*. *Salmonella* has been as the most important factor for food toxication, for example, *Salmonella* infections are caused annually by about 4/1 million people and several hundred deaths are in America [1, 2].

In the study by Phan and colleagues from 2000 to 2001 with 110 samples of shrimp market in Vietnam was conducted to determine the *Salmonella* contamination, based on the results have been reported 25.5% *Salmonella* contamination of samples [10].

Another study that was conducted by Mehdi Zahra'i and colleagues to determine the prevalence of major pathogens in seafood market in Ahwaz has been announced 3.4 % Prevalence of *Salmonella* contamination in shrimp [11, 12].

In this study, of 245 samples were assessed, 33 samples positive and 212 samples negative for *Salmonella* contamination and was determined 13.4% the prevalence of *Salmonella* contamination. Based on these results, as for the prevalence of *Salmonella* contamination in shrimp in Khuzestan Province, if shrimp are consumed raw or undercooked increases possible problems in consumer. Finally according to the studies recommended the shrimp should be rinsed well before...
cooking with chlorinated water, because of this has very important role in reducing the incidence of *Salmonella* contamination shrimp.

**REFERENCES**