Journal of Fisheries International 4 (3): 52-54, 2009
ISSN: 1817-3381

Intensity of Formalin Use for Consumable Fish Preservation in Dhaka City, Bangladesh

Emdadul Haque and A.B.M. Mohsin
Department of Fisheries, University of Rajshahi, Bangladesh

Abstract: Fishes are the one of the major source of food and protein to human being. In Bangladesh it is called as a national food. Almost every peoples are taking fishes more or less everyday. But now a days, this consumable fishes are being contaminated by formalin by some evil traders. Formalin may harm human body even drawn to death. To determine the level of intensity of formalin misuse to consumable fishes in Dhaka city this study was carried out for a period of three month form July 09 to September 09. Results show that this formalin poison is present frequently in fishes of different fish markets of Dhaka city. It is observed currently that almost 5% shops of total consumable fishes contains formalin treated fishes those sells in fish markets. This intensity also varies market to market and species to species.

Key words: Consumable fish, formalin, large species, SIS species, fish market, Dhaka city

INTRODUCTION

Fish is a major food staff of the world and in contrast of Bangladesh fishes are considered as one of the main national food item. Being a reverine country a lot of fishes are captured and also significant amount of fishes are produces through aquaculture to meet the food and nutritional needs of growing population every year. At present national average fish consumption is about 37 g/capita/day (13 kg year^{-1}) (DoF, 2003). Fish consumption of Bangladesh was lower than both the national average of 37 g and international requirements of 49 g (MoF, 2007). Hence, Bangladesh is importing a lot of fishes from foreign countries like India and Myanmar (Kausar, 2007).

Fishes are a highly perishable commodity. After catching or collecting from river or pond it take several hours to several days to consume depends upon the marketing and distribution channels. Therefore, it is highly essential to take proper step to preserve these fishes until reach to the consumer. Common practice of fish preservation in the country is icing. A lot of fishes are wasting due to improper ice use and transportation hazard which count losses to the traders. Therefore, some bad traders are trying to apply harmful chemicals like formalin for fish preservation. In Bangladesh for the first time this formalin treated fishes were captured from the traders in 2006 during an operation against impure food of a mobile court led by Metropolitan Magistrate Rokon Ud-Doula (Kausar, 2007).

Thirty seven percent formaldehyde solution, known as formalin, is characterized as an inexpensive and effective preservative that rapidly penetrates the tissue. It is frequently used as one of the most common preservatives for fish. Besides, it is widely used as a disinfectant in many human medicines and cosmetics and as an antiseptic in veterinary drugs and biological and in fungicides, textiles and embalming fluids (Feick *et el.*, 2006).

This formalin is very harmful to human health. Continuous addition of formaldehyde through fish in human body may cause uncontrolled cell growth or cancer in any part of body like stomach, lung and respiratory system (Ross *et al.*, 2002). Also, inhalation of formaldehyde cause respiratory system cancer such as sulfuric acid mists, mineral acid, metal dusts and heat (Marsh *et al.*, 2007).

This formalin tension in consumable fishes in Dhaka city is increasing rapidly. Recently, a Formalin Testing Centre (FTC) has been set up as part of the training programme like Managing At Top (MATT) for the senior government officials under the auspices of the Bangladesh Public Administration Training Centre (PATC) and within few days this center identifies several formalin treated fishes (BSSNews, 2009). It is a silent killer to human body but unfortunately general consumers are not cautious about this. This research conducted to justify the intensity of formalin infestation in consumable fishes in Dhaka city market.

Corresponding Author: Emdadul Haque, Noor Tower 9th Floor, 110 Bir Uttam CR Dutta Road, 1205-Dhaka, Bangladesh

MATERIALS AND METHODS

Study area selection: This study was conducted over a period of 10 weeks within Dhaka city. Dhaka city was divided into 4 zones as Kawran Bazar fish market, Mirpur Zone, Savar Zone and Jatrabari Zone.

Sample collection: Sample was taken twice a week from each sapling zone. Randomly 5 samples of small fish (SIS species) and 5 samples of large fishes were taken at each time from every study zones. Thus, a total of 800 fishes were tasted in search of formalin in its body from whole Dhaka city represented by four zones.

Formalin testing: Every morning of each sampling day collected samples of all sites were tested at a time at Formalin Test Center (FTC) situated at Kawran Bazar fish market. Formalin testing was conducted with the help of Formalin Test Kit invented by the Institute of Food Science and Technology under Bangladesh Council for Science and Research (BCSIR).

Statistical analysis: Results are expressed as mean±SEM (Standard Error of Mean). For group data differences were analyzed by simple ANOVA with the help of computer software Excel and SPSS.

RESULTS AND DISCUSSION

During study a total of 50 formalin treated fishes were found among 800 surveyed species which shows almost 5% of the total consumable fishes of Dhaka city fish market. This message makes sense that more or less the consumers are taking formalin through fish consumption although, it's not happening regularly. Intensity of formalin occurrence was observed more in larger fishes than the SIS (Small Indigenous Species of fishes). Among 400 samples of large fishes 41 formalin preserved fishes were found where only 9 small formalin treated fishes were found among same numbers of samples during the study period (Table 1). Statistical test shows a significant difference ($p<0.01$) between two groups of fishes (large and SIS) in terms of formalin use tendency for preservation by the traders. This difference is probably due to the sources of fishes, from where they are coming form. Because SIS are normally captured from the nearby rivers and canals and sold within the day, where as many of the large fishes comes form outside Dhaka, which needs preservation until sale.

Availability of such formalin treated fishes was also varying in different fish markets of the city. Among all the formalin treated fishes this rate was found highest in Kawran Bazar (48%) and lowest in Savar Bazar (14%).

Among SIS species highest number of formalin infection were recorded at Kawran Bazar fish market (6) and low/nil at Jatrabari fish market. On the other hand, highest number of formalin affected large fish was found in Kawran Bazar fish market (17) and lowest number was found in Savar Bazar fish market (5).

For the both small and large fishes Kawran bazaar represents highest number of formalin treated fishes, which is significantly higher ($p<0.05$) than the other fish market of Dhaka city.

Kawran Bazar is consider as largest raw products market in Bangladesh for wholesale and retail sale. Normally, huge gathering of fishes with huge variety from many palaces of the country is occurred here. Imported fishes are also found in Kawran Bazar everyday. Probably due to the collection form the distance places and also plenty of gatherings more formalin treated fishes were found in this bazar comparing to the other fish markets of Dhaka city. Hossain *et el.* (2008) shows in a research that presence of formalin is prominent in most of the imported fishes form Mayanmar and India. Such imported fishes are available in Dhaka city markets and unfortunately consumers have not enough idea about to identify such infected fishes for consumption.

Large formalin affected fishes were dominated by Indian major carps specially Rohu (*Labeo rohita*). It was around 44% of the total formalin treated fishes found during the study. It was followed by Catla (22%) and Mrigel (6%), respectively. On the other hand for SIS species small shrimp, kachki, bele and others were found 6, 6, 2 and 4%, respectively (Fig. 1).

Formalin treated fishes found in this study are almost very common and best selling species to the consumers like Rohu, Catla, Chingri, Kachki etc. This means those fishes, which have more commercial demand in markets is preserved illegally with formalin by the fish traders. By this traders gets benefited to keep fishes fresh long time for sale.

Table 1: Status numbers of formalin affected fishes found in different fish markets of Dhaka city among total 800 samples

Bazar/fish	Kawran bazar	Mir Pur bazar	Jatra Bari bazar	Savar bazar	Total
SIS species	6	1	0	2	9
Large species	17	9	10	5	41
Total	23	10	10	7	50
Contribution (%)	46	20	20	14	100

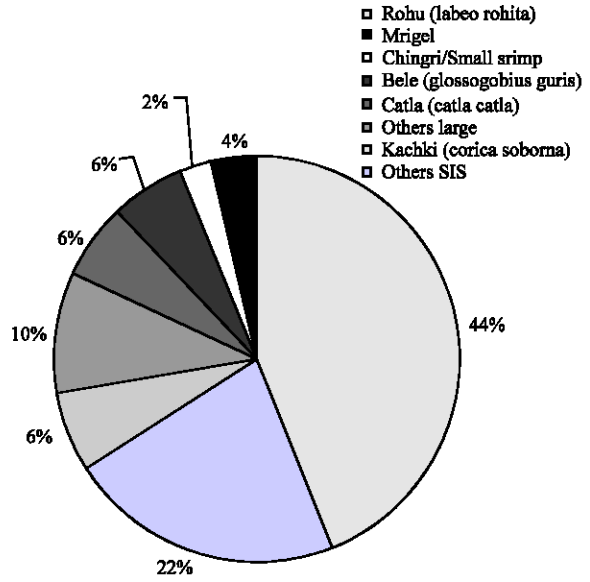

Fig. 1: Species wise (%) of formalin affected fishes found during the study from different fish markets of Dhaka city

CONCLUSION

Formalin is harmful to the human body. Although, formalin treated fishes found as very negligible amount in the daily trade consumption role but this news alarms us that the fish traders are trying to incorporate this harmful chemical in human food chain.

May be the don't have enough sense that what they are doing can affect even their own neighbors. Hence, effective campaign and law enforcement is essential from different government and non government level to stop this evil did.

REFERENCES

BSS News, 2009. Government to strictly monitor formalin contamination in fishes: Latif, A report published on BSS news online. http://www.bssnews.net/news Details.php?cat=8&id=45957&date=2009-07-14.

DoF (Department of Fisheries), 2003. Fisheries fortnight compendium, Ministry of Livestock and Fisheries, the People's Republic of Bangladesh, Dhaka, Bangladesh.

Feick, P., S.R.L. Haas, M.V. Singer and U.B. Ocker, 2006. Low-dose exposure of intestinal epithelial cells to formaldehyde results in MAP kinase activation and molecular alteration of the focal adhesion protein paxillin. Toxicology, 219: 60-72.

Hossain, S., M.A. Rahman, T.K. Sharkar and H. Shahjalal, 2008. Formaldehyde content in the Rui fish (*Labeo rohita*) in Bangladesh and effect of formaldehyde on lipid peroxidation in rat liver and intestinal tissues. J. Med. Sci., 8 (4): 405-409.

Kausar, I.A., 2007. About 80,000 kg formalin fish enter country every day: No policy for fish import yet, A report published in Daily star. http://www. bangladesh-web.com/view.php?hidRecord=152599.

Marsh, G.M. *et al*., 2007. Work in the metal industry and nasopharyngeal cancer mortality among formaldehyde-exposed workers. Regulat. Toxicol. Pharmacol., 48: 308-319.

MoF (Ministry of Finance), 2007. Bangladesh Economic Review, Finance Division, Ministry of Finance. The People's Republic of Bangladesh, Dhaka, Bangladesh.

Ross, P.F., H. Draayer and O. Itoh, 2002. An international collaborative study on a method for determination of formaldehyde in veterinary vaccines. Biologicals, 30: 37-41.