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Nitrofurantoin a curse for shrimp export

Bangladesh government has been warned several years back by the buyers and foreign regulatory authorities about the presence of harmful chemical in its frozen foods, but there was not much improvement made on this matter yet, writes Momin Ud Dowla

It came as a great surprise that a shrimp consignment shipped for export was rejected by foreign buyers, because the presence of Nitrofurantoin compound was detected in it. It is a great loss for us as it implies restriction on future export of shrimp, though the industry in question possessed some state-of-the-art processing facilities. As a result, it faced suspension on their export privilege for a cause that they have no contribution in it. So far as the knowledge of this writer goes, the Ministry of Fisheries and Livestock identified the possible contamination sources of Nitrofurantoin more than a year back and, unfortunately, to all intents and purposes no actions were taken to safeguard this vital shrimp industry. In fact, shrimp is the second largest export commodity next to readymade garments (RMG). The writer had the opportunity to represent the private sector and be a part of this problem-solving process and would like to share some information for the knowledge of all concerned.

What is Nitrofurantoin: Nitrofurantoin are a class of drugs typically used as antibiotics or antimicrobials. The defining structural component is a furan ring with a nitro group. Members of this class of drugs include:

- Furazolidone, antibacterial
- Nitrofurantoin, antibacterial
- Nitrofurazone, antibacterial
- Nifurtimol, antibacterial
- Nifuroxazide, antibiotic
- Nifurtimox, antiparasitic
- Nifurazide, anti-infective

Due to its harmful and high residual nature, this chemical has been banned in many countries, especially in those countries that export animal products like shrimp, fish, chicken meat, egg, milk etc., to the developed world. The European Union (EU) banned the use of Nitrofurantoin in food producing animals by classifying it in Annex-IV (list of pharmacologically active substances for which no maximum residue limits can be fixed) of the Council Regulation 2377/90. The Food and Drug Administration (FDA) of the United States has prohibited Furaltadone since February 1985 and withdrew the approval for the other Nitrofurantoin drugs (except some topical uses) in January 1992. The topical use of Furazolidone and Nitrofurazone was prohibited in 2002. Australia prohibited the use of Nitrofurantoin in food production in 1992. Japan did not allocate MRLs for Nitrofurantoin leading to the implementation of a "zero tolerance or no residue standard". In Thailand, the Ministry of

Health issued in 2001 Proclamation No. 231 MRL of veterinary drug in food which did not allocate MRL for Nitrofurantoin. The Ministry of Agriculture and Cooperatives had already prohibited importation and use of Furazolidone and Nitrofurazone in animal feed in 1999 which was extended to all Nitrofurantoin in 2002. Several metabolites of Nitrofurantoin such as Furazolidone, Furaltadone and Nitrofurazone cause cancer or genetic damage in rats.

Steps taken by the government so far: The government of Bangladesh has been warned several years back by the buyers and foreign regulatory authorities about the presence of this harmful chemical in the frozen foods, but there was not much improvement made on this matter yet. The last caretaker Government took initiative and involved all concerned including technical and non-technical personnel, private sector and the representatives of support industries like hatchery, feed mill, animal health and all related stakeholders in a brainstorming process to resolve this vital national crisis. The contamination sources which were accurately identified are stated below;

1. Hatchery source: Some hatcheries are using Nitrofurantoin self-destructively for treatment purpose of brood stocks. This later sustains as residue in the seeds and travels to culture pond.
2. Feed source: Shrimps are fed with feed which requires high protein (min 30 per cent) for growth. One of the main sources of protein is Meat and Bone Meal (MBM) -- an indigenous, highly volatile "No Quality" commodity which is mainly coming through legal (?) import. This commodity is not truly made to be used in animal feed rather it is for the application of fireplace as incinerator and in soil as organic fertiliser. This commodity is not only contaminated with Nitrofurantoin but also contains pork by-product which is banned in our import policy due to religious compliance. Unfortunately this highly contaminated and "immoral" raw material is also being used indiscriminately in poultry and all other fish feeds.

Local sun-dried fish: Farmers and feed mills are collecting and using local sun dried fish as protein source in fish feed which is also a potential source of Nitrofurantoin, because this

chemical is also used for protecting fish from bacterial contamination. They also use toxic pesticides to control infestation of insects. This type of raw material is very harmful for both humans and animals.

4. Organic fertiliser: Cow dung and poultry manure which are seldom used as organic fertiliser in shrimp pond for plankton growth. These are also potential sources of Nitrofurantoin, because these animals are treated with drugs containing Nitrofurantoin and get excreted through manure, which is finally transferred to the aqua pond as organic fertiliser.

What should the government's immediate action plan?

1. Create a massive awareness amongst the hatcheries, farmers, feed millers, organic fertiliser suppliers, the government's extension departments, local fish meal suppliers and the frozen food exporters about the significance of this issue.
2. Establish lab facility for detection of Nitrofurantoin in all possible sources and also develop a rapid test kit which can be used by all stakeholders concerned to get a primary indication.
3. The government must set up a monitoring cell and a surveillance team to ensure control of all possible sources of contamination.
4. Ban import of Meat and Bone meal for safety of our citizen as well as the shrimp industry which are currently being used indiscriminately.
5. Evaluate the necessity of the above-mentioned drugs under Nitrofurantoin group and ban all manufacturing and import of such chemicals immediately.
6. Let the Fishery extension department work with the fish farmers to improve the quality of fishmeal used in animal feed. Refrain farmers from using harmful chemical and offer safer alternatives.

It is not so difficult to solve this problem unless the government is biased by some interest groups who may be temporarily affected such as pharmaceutical industries, feed mills and commodity trading companies. There is no reason why the government will wait to resolve this issue where the solution is already known. For the purpose, the government needs to have the correct mindset to "pull the trigger to safeguard the national interest".

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