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Food Safety Status on Poultry Meat and Egg in Afghanistan

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Abstract: Foodborne illness is one of the most widespread health problems in the world. In addition, the food safety of poultry products remains a severe problem in many countries around the world. Like in many other countries, the government handles the development of food safety standards in Afghanistan. The poultry industry in Afghanistan has been under dynamic and progressive development. Despite the advances in the poultry industry in Afghanistan, the issues of foodborne pathogens, drug and chemical residues remain. Meat inspection at poultry processing plants has been successful but has certain limitations. More importantly, drugs, pesticides, mycotoxins and other chemical residues must be monitored in poultry meat and eggs. This work must be carried out in close collaboration with human and environmental health professionals, analysts, epidemiologists, food producers, processors and traders. Poultry veterinarians and the Afghanistan Veterinary Organization, International Veterinary Organization (IVO) should play a decision-making role in developing the poultry industry. Poultry veterinarians and IVO have a dual responsibility; epidemiological surveillance of poultry diseases and ensuring the safety of meat and eggs. Through their presence on farms and appropriate collaboration with farmers, poultry veterinarians play a crucial role in ensuring that birds are kept under hygienic conditions, especially conditions with public health significance. Slaughterhouse inspection of live birds (ante mortem) and the carcass (post-mortem) plays a key role in the surveillance network for poultry diseases and zoonosis and ensures the safety of poultry meat.

Keywords: Food safety, poultry meat, Afghanistan, foodborne

1. Introduction

Food safety and food control have been recognized as important issues worldwide. For more than a century, developments in food animal production and new control approaches have contributed to developing new food safety systems in most developed countries like the USA considered by the Center for Disease Control (CDC) to be effective in the reduction and prevention of foodborne disease. Food safety of poultry products remains a severe problem in many countries globally. Each year, an estimated 76 million people experience foodborne infections in the United States, causing 325,000 hospitalizations and 5,000 deaths (Mead et al., 1999). Foodborne illnesses from *Salmonella enteritidis* in eggs alone were estimated to cause 182,060 cases in the United States during the year 2000 (Schroeder et al., 2005). Data from the national surveillance system in England and Wales revealed that from 1996 to 2000, an estimated 1,724,315 cases of indigenous foodborne diseases per year resulted in 21,997 hospitalizations and 687 deaths (Adak et al., 2005).

According to the study and reports made by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations (Liese, 2010), illness due to contaminated food is one of the most widespread health problems in the world and a significant cause of reduced economic productivity, especially in developing and underdeveloped countries. The incidence rate of foodborne diseases differs in different parts of the world. For instance, in industrial countries, many such maladies do not exist or have been halted due to food safety education, higher hygiene

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standards, improved water supplies and sanitation, and the application of safe food processing technologies (Adak et al., 2005).

The general ways of food contamination are physical, chemical, biological and environmental. Among these, bacteria, parasites and viruses were the most biological critical causal agents of diseases in humans consuming contaminated food. Although these organisms still play a significant role in creating health problems in humans, new hazards, including veterinary drug residues, pesticides and other contaminants such as heavy metals and environmental agents, are additional pollutants that are essential biological factors.

Residues in poultry products are leftovers of compounds used in the production of birds to enhance productivity and reduce or eliminate disease organisms or parasites. Antibiotics are also used by the poultry industry and poultry veterinarians to improve growth and feed efficiency and reduce diseases. Potential residue sources are coccidiostats, antimicrobials, wormers, mound-inhibitors, toxin binders, and pesticides used for mites and/or lice control. In addition, compounds used indirectly, such as rodenticides, insecticides, and herbicides can become residues if birds contact with them. There is a legal requirement that drug concentrations in edible animal products are not at levels greater than those established as safe by the relevant regulatory authority in the country. In many countries, this upper level is referred to as the 'maximum residue level' (MRL), while in the United States it is termed as 'tolerance' (Rahimi, 2013).

2. Poultry Production in Afghanistan

The poultry industry in Afghanistan has been under dynamic and progressive development. At present, there is a pure broiler line producer and many farms for rearing grandparents (GP), parent stock (PS), broilers and layers. There are about 15 GP farms that can supply the required PS flocks. The pure broiler line farm is well established now and can supply high-quality flocks for the local market and export. In 2008, the numbers of broiler and layer PS farms were 490 and 18 units, respectively, and the numbers of commercial broiler and layer farms were 17,168 and 1,448 units, respectively. Meanwhile, European breeding companies are also in the market and present their birds for GP and PS rearing. Most broiler farms are located close to more densely populated regions and in the country's north (the wetter) part of the country. The poultry industry is private and some services are provided through the cooperatives agencies. Few poultry farms are under government management. According to the government policy for supporting privatization, it is planned for these farms to be sold to the cooperatives and private sectors (Salehzadeh et al., 2007).

2.1 Common Infectious Diseases

Despite the advancements in the poultry industry, Afghanistan's poultry industry is facing heavy losses caused by infectious diseases. In 1998, an outbreak of low pathogenic avian influenza virus (H9N2 subtype) occurred in the Afghanistan Ian poultry industry (Pourbakhsh et al., 2000; Orlandi et al., 2002; Nili & Assai, 2003). Since then, mixed infections of the influenza virus with other respiratory pathogens, particularly the infectious bronchitis virus, *Mycoplasma gallisepticum*, and avian pathogenic *Escherichia coli*, are thought to be responsible for high mortality rates and significant economic losses in chicken and turkey flocks (Seifi et al., 2010; Hadipour et al., 2011).

There can be little doubt that the severe form of Newcastle disease (ND) is a severe problem either as an enzootic disease or as a cause of regular, frequent epizootics throughout some areas of Africa, Asia, and Central and South America (Spradbrow, 1988). Afghanistan's poultry industry suffers from ND due to occasional outbreaks and vaccination costs. More recently, the prevalence of avian *Metapneumo* virus (AMPV) infection was reported in broiler and broiler breeder chickens in Afghanistan (Rahimi, 2011). In the past few years, the prevalence of emerging poultry pathogens such as *Ornithobacterium rhinotrachealehas* (ORT) has also been reported from different parts of Afghanistan (Banani et al., 2002; Allymehr, 2003; Rahimi & Banani, 2007; Asadpour et al., 2008; Rahimi et al., 2012).

There are issues needing attention, particularly the food-borne diseases of humans caused by pathogenic bacteria, drug and chemical residues (World Health Organization, 2000). Laboratory-based surveillance may not be employed throughout the entire food production chain (World Health Organization, 2002).

2.2 Food Safety Controls

Afghanistan intends to standardize and support the exportation of products. Like many other countries, the development of food safety standards is handled by governmental bodies such as the Ministries of Agriculture (the Afghanistan Veterinary Organization, IVO), Health and Medical Education, and the Institute of Standards and Industrial Research. In the meantime, research continues to promote national food safety quality (Jacobs & Sumner, 2002).

The food that we eat is possibly carried harmful microbes that originated from the natural micro-flora of the raw material. These microorganisms are introduced in the course of harvesting/slaughter, processing, storage and distribution (Adams & Moss, 2014). Almost all market-type poultry produced in Afghanistan is slaughtered in modern industrial slaughterhouses. According to the governmental officer, the production of poultry meat in Afghanistan is about 219000 tons/per year.

The IVO is responsible for supervising all kinds of food derived from animals. It has appointed meat inspectors in all processing plants, including slaughterhouses. Meat inspection at poultry processing plants has been successful but has certain limitations. More importantly, the drugs, pesticides, mycotoxins and other chemical residues must be detected

and monitored in poultry meat and eggs (Adak et al., 2005). This work has to be carried out in close collaboration with human and environmental health professionals, analysts, epidemiologists, poultry farmers, processors, and traders. In rural areas and small towns, live bird markets are the primary sources of providing poultry meat and eggs for customers.

Effective food safety management requires multidisciplinary scientific and technical inputs and a high level of communication and consultation with all interested parties (Kafetzopoulos et al., 2013). Veterinarians have a significant role in this process (Hu et al., 2010). Poultry veterinarians may provide poultry farmers with information, advice, and training on avoiding, eliminating or controlling food safety hazards including drug and pesticide residues, myco-toxins and environmental contaminants in poultry production (Emal & Muhsni, 2017). Numerous poultry farms are in some geographically restricted areas in Afghanistan, leading to poultry health, food safety, environmental, and human health problems due to improper implementation of biosecurity measures Afghanistan's poultry veterinarians and IVO need to play a decision-making role in the development of the poultry industry, animal health care, public health and control of zoonosis' disease because it is the veterinarian who is likely to recognize problems in concentrated poultry production farms within these restricted areas (Moahid & Maharjan, 2020).

The ultimate goal of poultry food safety systems is to establish public trust and consumer confidence. It is recommended that control should be made at the farm level and poultry processing plants to realize a comprehensive food safety control from the farm to the consumer's table. Authorities should inform and educate the public about the hazards of drug residues in poultry products. The IVO and the Afghanistan Veterinary Council should provide regular training courses for poultry producers concerning overall food safety measures. Interdisciplinary collaboration in food safety among poultry producers, poultry processors, retail markets and consumers are an emerging necessity (Adak et al., 2005).

3. Conclusion

The Afghanistan poultry meat and eggs production need to apply a stringent hygienic practice in every handling process. Food-borne viruses, medicines, and chemical residues that remain in poultry meat and eggs caused detrimental effects to food safety. Poor sanitation practices will allow the microorganisms to contaminate the poultry meats and eggs, simultaneously lowering the quality, productivity and disqualified. Thus, we proposed for poultry producer to keep their products in the refrigerator to control the development of microorganisms for short-term storage. Meanwhile, for the long-term storage, we suggested storing their products in a clean deep freezer.

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Conflict of Interest

The authors declare no conflicts of interest.

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