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Quarantine Regulations in Egyptian Airports against Infection in Horses and Contamination of Chilled and Frozen Beef by Salmonella species

A thesis presented by

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Abstract

Quarantine regulation requirements for importation of horses in Egypt and the most important 6 quarantines in Cairo and Giza approved by General Organization of Veterinary Services (G.O.V.S.) used for imported horses to Egypt were hygienically evaluated. Monitoring against *Salmonella* through Cairo International airport was assessed from July 2014 through July 2015 and from January 2014 through July 2015 for imported horses and beef respectively. Hygienic and construction criteria of quarantines were hygienically inspected, relation to main road, type of stables , number of boxes (stalls), breed, length of stall ,width of stall, floor, doors, type of wall, floor-to-ceiling height, type of light, feeding system , drinking system, type of ventilation system, riding area, drainage system and process of disinfection. The samples included the fecal samples of imported horses *(n=90*), imported chilled beef (*n=67*) and imported frozen beef (*n=63*).Imported horses from Belgium, England, Germany, France, Emirates and Kuwait were free from *Salmonella*. Although 1.5% of the imported chilled beef was positive for *Salmonella*, The most prevalent serotype isolated was *S.kentucky*, imported from Australia in summer 2014, while 6.4% of the imported frozen beef was positive for *Salmonella*; the most prevalent serotype isolated were *S.infantis*, *S.hafnia S.typhimurim and S.newport* imported in winter 2014, summer 2014(South Africa), winter 2015(Australia) and summer 2014 (U.S.A) respectively. Prevalence rate of *Salmonella* higher (60%) in summer season and decreased in winter (40%) but lower in autumn (20%), absence in spring. *Salmonella typhimurim* was sensitive to florfenicol, gentamycin and streptomycin.

Key words (Veterinary Quarantine- - Imported horses - Imported chilled beef - Imported frozen beef - *Salmonella*)

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Introduction

Now days and due to the fast increase in human population, great effort were given by governmental to human welfare in Egypt. Besides the establishing of new animal farms and poultry plants, it is necessary to import various types of protein in the form of living animals for breeding and slaughtering, beside importation of meat and horses for competition. It is necessary also to import seminal fluids and other biological products as vaccines to protect the animal health and to prevent the spreading of infectious diseases among farm animals and poultry.

Quarantine plays a pivotal role in the control and prevention of the entry and spread of animal diseases in a country. The term "quarantine" is used to cover all restriction on the movement of infected or suspect animals or material to prevent the spread of disease **(FAO, 1991).**

Quarantine as the first line of defense against infectious diseases and suggested the internal quarantine between natural and administrative areas in a country (i.e. disease free or infected zones) is as equally important as international quarantine in controlling animal movements and limiting the spread of infectious diseases and pests. **(El Hicheri, 1997)**

Egypt requirements for imported horses & chilled and frozen beef are governed by epidemiological situation of the country and by the law of Agriculture No. 53, 1966 and Ministerial Decree No. 47, 1967

concerning veterinary quarantine, and its modifications **(Ministry of Agriculture, 1967).**

Egypt is one of the most famous countries in breeding Arabian horses for both the local market and exportation. Moreover, considerable horse populations are used in police trooper and tourism all over Egypt **(El Barody, 1987).**

Salmonella infections can infect horses of all ages and range in severity from asymptomatic colonization to severe systemic illness. The clinical signs of salmonellosis are variable and may include fever, mild abdominal pain, anorexia and depression without diarrhea in some horses, but most horses that are clinically infected have moderate to severe, watery diarrhea. Foals may develop hemorrhagic diarrhea, septicemia, pneumonia, meningitis, and septic arthritis or physitis. Treatments are largely supportive, and include fluid and electrolyte therapy, anti-inflammatory drugs, anti-endotoxin treatments, probiotics, intestinal protectants and nutritional support. Antimicrobial therapy is controversial. Salmonellosis is an important zoonosis **(Smith, 1981)**

Salmonella enteritidis and *Salmonella typhimurium* are the most commonly reported serovars in the European Union (EU), being associated with 52.3% and 23.3% of all confirmed human infections (salmonellosis), respectively. Since 2006, *S.infantis* has been the third most common serovar in the EU due to ingestion of retail meat and meat products **(EFSA and ECDC, 2011).**

Salmonella species are considered to be among the most important foodborne pathogens in the world and salmonellosis is still one of the most widespread foodborne bacterial illnesses in humans, with clinical manifestations ranging from asymptomatic state to severe disease **(Galanis *et al*. 2006)**

This study concerned with importation through Cairo International airport:

- Poultry (chicks, ducks, poults and hatching eggs).
- Horses (competition and racing horse).
- Meat (chilled and frozen beef) and meat products.
- Pets (dogs and cats).
- Fish and fish products.
- Milk and milk products.
- Seminal fluids and vaccines
- Wild animals and wild birds

With special reference in this study to horses and beef meat, which have been subjected to health examination or inspection by Official Veterinarian of exporting country (Veterinary Quarantine and General Organization for Export and Import Control), and which are accompanied by an international Veterinary Certificate provided by the Veterinary Authority of exporting country.

Therefore, the present work was carried out to reveal the following points:

1. Quarantine regulations in Egypt.
2. Quarantine regulations requirement for importation of horses in Egypt.
3. Evaluation of hygienic and construction criteria of quarantines in Cairo and Giza
4. Isolation, identification and serotyping of *Salmonella* from imported horses and beef (frozen & chilled).

Review of Literature

I. Quarantine Regulations

1. Importance of quarantine and its role in prevention and control of diseases:

Food and Agriculture Organization (FAO) (1991) indicated that the whole purpose of quarantine was security and that the quarantine process reduced the risk of disease in production into a country. However, it must be accepted that there is some possibility of disease occurring at some stage between initial testing of animals before exportation and final release in the country of importation and that quarantine station phase in the import country is very often the last chance to prevent a disease introduction.

El Hicheri, (1997) considered quarantine as the first line of defense against infectious diseases and suggested the internal quarantine between natural and administrative areas in a country (i.e. disease free or infected zones) is as equally important as international quarantine in controlling animal movements and limiting the spread of infectious diseases and pests.

Abd El-Rahim *et al.* (1999) stated that Rift valley fever (RVF) disease has been introduced into Egypt after the importation of infected ruminants especially camels from the Sudan.

Baldok *et al.* (1999) emphasized that all infectious diseases have adverse consequences on human and animal populations.