

A retrospective survey of poultry carcass condemnation in abattoirs of Tehran province, Capital of Iran, Iran (2009-2011)

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Abstract. Objective: This retrospective survey has been performed to evaluate condemnation rate of poultry carcasses at 28 abattoirs of Tehran province, Capital of Iran. Material and Methods: All daily condemnation records were used as the sources of data. Results: In this survey 214,997,429 poultry were slaughtered and 705,046 (0.33%) poultry carcasses were condemned. Cachexia significantly ($p < 0.05$) leads to carcass rejection in this survey and accounted for 46.57% of total condemnation rejection. Conclusions: This result implies that, in contrast with some other countries, Cachexia is the most frequent reason for poultry carcass condemnation in Iran. The average direct economic loss incurred annually as a result of condemnation of poultry carcasses was estimated as high as 1,621,605 USD.

Key Words: poultry carcass, condemnation, economic loss, slaughterhouses, Iran.

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Introduction

Over the last decades, poultry meat production has been developed greatly in all aspects throughout the world. This industry has become popular due to the relatively low cost of production, low fat content and the high nutritional value of poultry meat (Chouliara *et al* 2007).

In the poultry production industry, various diseases and many pathological changes can affect the carcass characteristics. This leads to economic losses due to total or partial condemnation of carcasses or viscera following veterinary evaluation at the time of slaughter. Sometimes these diseases threaten public health with zoonotic disease (Gracey *et al* 1999; Ansari-Lari & Rezagholi 2007). In contrast to these there are researchers (Aminzade *et al* 2012a) with preoccupations to increase poultry and implicit human's life quality by addition of medicinal plants in bird's diet, and not at least these approaches leads to enhanced carcass qualities (Aminzade *et al* 2012b).

Abattoirs play an important role in disease monitoring, since many diseases are detected at slaughter line. This retrospective survey was carried out to determine the various causes of carcass condemnation and their prevalence in slaughterhouses of Tehran, capital of Iran.

Materials and method

In this retrospective survey, all registered data related to slaughtered poultry were collected and analyzed from 28 abattoirs in

various regions of Tehran province, from 20 March 2009 to 20 March 2011.

The data, including the total number of chicken slaughtered, total number of condemnation rate (TCR) and number of those condemned for specific conditions were used as a source for this survey. Poultry meat inspectors make decisions for carcass condemnation on the basis of visual inspection of carcass and viscera.

The direct economic losses due to poultry carcass condemnation were calculated by the following formula, and procedure:

$$DFL = C \times P \times W$$

Where: DFL - Direct Financial Loss; C - Number of Condemned poultry carcass; P - Average poultry carcass Price (USD/Kg); W - Average poultry Weight (Kg). The Average weights of poultry carcasses (W) were determined by weighting 200 poultry carcass. The average weights were calculated as 1.8 kg in this region. The average sell price (P) for each kilogram of poultry carcass was 2.56 USD, acquired by interviewing local markets in different areas in Tehran province during 2007 to 2011.

Results

A total of 214,997,429 birds were slaughtered at Tehran province abattoirs from 20 March 2009 to 20 March 2011. This survey revealed that the total rate of carcass condemnation was

0.33%. The prevalence of poultry carcass condemnation due to specific diseases and other pathological conditions during this 2-year period is described in figure 1. Average annual direct economic loss due to bird carcass condemnation was estimated to be 14,594,452,200 Rial or equivalent of 1,621,605 USD. As is shown in the table 1, Cachexia significantly ($p < 0.05$) lead to carcass rejection and was the most prevalent reason (46.57%) for poultry carcass condemnation in these 2 years.

Table I. Causes of poultry carcass condemnation in Tehran province abattoirs from 2009-2011

Cause of condemnation	No. of carcass condemnation	% of total condemnation	% condemnation of total slaughtered poultry
Cachexia	328312	46.6	0.153
Septicemia	131461	18.64	0.062
Ascites	60214	8.54	0.029
Bruises	51943	7.36	0.025
Bronchitis / CRD	37125	5.26	0.017
Poisoning	36379	5.15	0.017
Overscalding	28910	4.1	0.014
Contamination	15457	2.19	0.007
Synovitis / Arthritis	13004	1.84	0.006
Marek's disease	2241	0.32	0.000
Total	705046	100	0.330

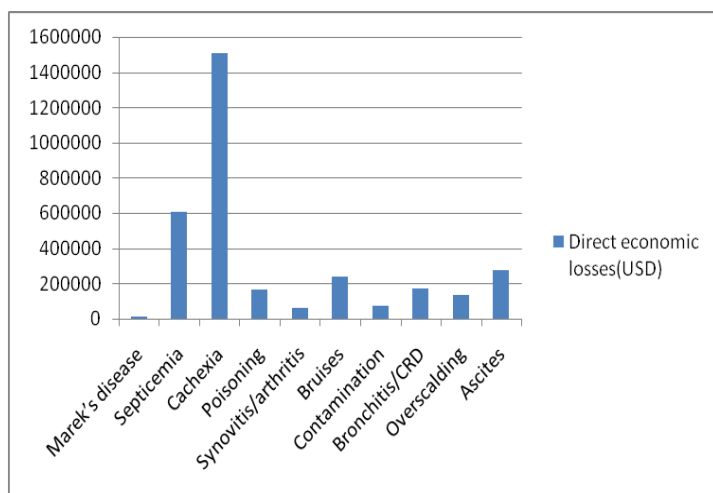


Figure 1. Direct economic losses due to carcass condemnation in Tehran province abattoirs, during 2009-2011.

Discussions

There are many pathological conditions that cause problems for poultry farmers (Ansari-Lari & Rezagholi 2007). The causes of condemnation are classified into two categories: the causes that took place at the farm and the other ones that occurred during the poultry transportation to abattoirs or the process of slaughtering.

Regarding those causes dependent by farmers and biological material respectively, maybe should be paid more attention to genotype and environment interaction in order to breed more viable and disease resistant individuals, and at the end more productive populations with less losses (Chigi *et al* 2011). A great number of the carcasses condemned for disease conditions were emaciated or much lighter in weight than normal birds. Many of the birds had evidence of longstanding diseases, conditions which should have been obvious in the living animal. Further loss is incurred as a result of the space these birds occupy and the feed they consume on the farm. Many disease conditions are influenced by the flock management (Ansong-Danquah 1987). The main cause of carcass rejection found in this survey was Cachexia which accounted for 0.15% of all birds and it was lower than finding of Ansari-Lari & Rezagholi (2007), who reported 0.28%. In this survey Cachexia was responsible for 46.57% of TCR in comparison to 37.7% which was reported by Ansari-Lari & Rezagholi (2007).

Results of this survey showed that almost half of condemnation is due to Cachexia in Tehran province. These results are contradictory to what has been found in other countries. In industrial poultry production economic aspects are of great importance, thus chickens feed formulation is calculated precisely and it is almost unlikely that chickens suffer malnutrition. Therefore, this situation is the result of some diseases with effects such as anorexia and malabsorption.

The second most frequent rejection cause found in this survey was septicemia with the rate of 0.06% of all of the birds and 18.64% of TCR.

Birds with ascites, the next rejection cause, constitute 0.03 % of total slaughtered poultry and 8.54% of TCR.

The rejection rate for bruising was recorded 0.24% of all of the birds. Factors such as the method of harvesting, transport time, waiting time, type of transportation boxes, and density per cage, harvesting period, age, sex and temperature were reported by Farsaie *et al* (1983) as parameters influencing poultry lesions. According to Gregory & Wilkins (1989), incorrect stunning before slaughter may break the blood vessels and provoke bruising, bleeding in the wings, purple discoloration in the skin, breaking bones and clots formation in the muscle of the chest of the bird. Farsaie *et al* (1983) reported that bruising may be found on up to 25% of broilers processed in the United States. According to the USDA (2006), each year almost 400,000 to 1 million poultry carcasses are condemned for bruising.

Result of a work carried out by Radkowski *et al* (1996) in Poland revealed that the most common reason for rejection was Marek's disease (1.66%), whereas in this survey rejection rate due to it amount about 0.0001%.

Bremner (1994) observed that from 1.3% of slaughtered broilers condemned in England and Wales, septicemia/toxemia/fever were the most frequent causes of condemnation.

In a study by Haslam *et al* (2008) in England, the mean percentage of TCR calculated was 1.23% and the main cause of carcass rejection found in this study was acute internal pathology, which accounted for a mean of 0.44% of all birds.

Conclusion

To conclude, most of the poultry carcass condemnation is due to disease occurrence, therefore farmers and responsible authorities

should pay more attention to avoid incidence and spread of disease. Causes such as bruising and over scalding can be minimized by more accurate handling and slaughtering procedures.

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