

*Review Article*

## **TRANSPORTATION STRESS IN BROILER CHICKEN**

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**Abstract:** The increasing demand in proteins to feed the growing world population necessitated industrialization and transport of birds. These stressors acting on poultry during transportation are numerous and the responses of the animal to them are complex, non-specific and often detrimental to their health and production.

**Keywords:** Broilers, Mortality, Stress.

### **Introduction**

Broiler industry is the one of the fastest growing sectors in India. Approximately 3.725 million metric tonnes broiler chicken meat is currently produced in India. Poultry chicken meat production increased from 0.79 million tons to 3.725 million tons during the year 1980 and 2014. Per capita availability also increased from 0.27 kg to 3.1 kg during the same year. Broiler rearing is more feasible in rural areas, whereas its high demand in urban areas. The major contributor's states to the output of broiler chicken meat during 2013-14 are Andhra Pradesh (Hyderabad-Vijayawada-Chittoor belt), Tamil Nadu (Coimbatore-Salem belt), Maharashtra (Pune-Nasik-Mumbai belt) and Haryana (Gurgaon-Yamunanagar belt). Broiler chicken rearing is mostly being carried out in the form of an intensive system in different geographical areas and to be transported by road over a long distance to urban areas or centralized processing plants.

Commercial poultry producers are suffering from economic loss due to management, adverse climatic or environmental conditions, disease and stress. Both genetic and environmental had resulted in an increased sensitivity of poultry to stressors. These stressors affected the physiological and biochemical status of the bird. Transportation stress not only affects the chicken birds but also decrease the quality of chicken.

### **Stress is the main reason**

According to Elrom (2000), the stressors classified into mental, physical or mixed. Transportation increased both physical and mental stress to the birds.

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Physical stressor	Mental stressor
<ul style="list-style-type: none"> <li>• Temperature: heat and cold</li> <li>• Wind</li> <li>• Air flow and the gas content</li> <li>• Vehicle vibration</li> <li>• Physical injury: brushing, fractures and dislocation of bones</li> </ul>	<ul style="list-style-type: none"> <li>• Social mixing</li> <li>• Food and water deprivation</li> <li>• Fear and pain</li> </ul>

These stressors produce changes in the physiological and biochemical status of the bird disturbing its homeostasis thereby the quality and quantity of meat. During stress, the natural antioxidants of the body are exhausted, exposing the cells to harmful effects of reactive oxygen species (ROS).

Physical stressors could be divided into three phases (Nilipour, 2002)

1. Handling of the bird during catching most are injured,
2. Physical injury during loaded into coops, these due to poor vehicle and transport container design.
3. The effects of the environment on the bird during transport.

### Transportation stress in poultry

A long duration of transportation of poultry by road across various ecological and climatic zones imposed many stressors upon the transported birds. During transit birds may be exposed to a variety of stressors such as thermal changes, acceleration, motion, vibration, fasting, withdrawal of water, social disruption, noise and internal vehicle thermal microenvironment (Abeyesinghe et al., 2001). During transport birds without feed and water for a long time includes waiting time at the farm, transportation and waiting period at the plant before processing. Burkholder et al. (2009) suggested that stressors such as feed withdrawal, temperature fluctuations and confinement during transportation disturbed the normal microflora and increased susceptible pathogens such as *Salmonella* bind and colonize the intestinal epithelium in poultry would increase the risk of carcass contamination during processing. Transportation also induced changes in blood composition as well as heart rate, electrolyte concentration, hormone levels, metabolites enzymes, live weight and meat quality.

### Effect on body weight

Transportation of long distance to the loss in live weight or carcass weight. Oba (2009) observed decreased body weight in broilers during transport period 30, 90 and 180 min were 2.11, 3.03 and 4.82 per cent, respectively and longer the transport period was higher weight

loss compared than short transport period. Karaman (2009) also observed a significant reduction in body weight of broiler chicken during transportation.

### **Transport mortality**

Sandercock *et.al.* (2006) rapidly growing strains of broiler exhibited an increased susceptibility to stressors. Vecerek et al. (2006) observed that short journeys (up to 50) were less mortality (0.15 percent) compared than long journeys (300 km or more) were high mortality (0.86 percent).

### **Conclusion**

Nutritional manipulations are an easy and cheap way to reduce stress. Most widely used supplements in recent days to prevent stress during transport of slaughter animals are those based on amino acids, vitamins and minerals. Use of natural antioxidants during transportation can alleviate the stress and improve birds condition without affecting meat quality.

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