



# Importance of Stress Factors in Poultry



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## Abstract

Stress is the whole biological response to an internal or external stimulus that threatens the homeostasis of the creature in the form of anatomic, physiological, and behavioral changes. While short-term stress events do not produce significant consequences, long-term stress can cause a wide range of harmful effects on poultry production. Stress factors are well known and kept at a minimum is a very important issue in terms of poultry breeding, animal welfare and productivity increase. In this review, common stress factors in the poultry sector are researched.

**Keywords:** Stress; Factors; Chicken

## Introduction

Larger farms, more feed, and earlier cut-off require more animals to grow in more dense environments in order to be able to meet increasing demand for protein from chicken and eggs, and this creates significant stress and stress on birds [1-4]. Stress factors cause to decreased appetite, growth retardation, and susceptibility to diseases, as well as increased mortality rates in poultry.

Stress factors or stressors in defense stimulants are called organisms under the influence of internal and external factors such as hunger, fear, temperature change, noise, tight accommodation, infections [5]. Among the most common stress factors in cage-type poultry farming are considered to be the most common types of infectious diseases, including temperature, humidity, lack of light, crowded housing, ventilation, noise and fear [6-8].

The main effects of heat stress are increased mortality, decreased feed consumption and weight loss and egg production [1,9]. Because the thermal environment is a factor controlling the energy metabolism and the change. While low temperature or cold stress increases animal health, prosperity and production efficiency, high environmental temperature is one of the factors that affect egg poultry negatively [10]. During temperature stress, in addition to increased breathing alkalosis and water consumption, the amount of protein in the carcass decreases and fat deposits increase. These changes, as well as heat stress; decrease in the production of thyroid hormones and increase in the amount of corticosterone may occur in other stress conditions as well. The increased amount of corticosterone also

provides the basis for infections by suppressing the immune system [11].

Light is one of the environmental factors affecting the activity and performance of poultry animals. In addition to the low yields, the increase in cannibalistic pathological movements is taking place and animal stress enters [12]. Indeed, the identification of the breeding environment is directly related to poultry physiology, reproductive and behavioral activities [13].

It has been reported that poultry grown in low intensity light environment has reduced carcass weight, malfunctions related to skeletal system, vision and reproduction, changes in animal behavior, and fear of animal stress [14]. They reported that the proportion of carcass protein decreased and the fat ratio increased in animals raised under dim light [15]. However, excessive intensity of light has also been shown to cause stress, leading to an increase in aggressive behavior [16,17]. Therefore, the importance of natural light in terms of animal welfare has been emphasized, emphasizing the importance of having a free circulation area for the animals to see daylight in poultry in order to increase the yield and prevent the stress [18].

Overcrowding is one of the most important and most frequent stress factors in terms of production and yield in poultry farming. Studies on overcrowded stress reported that performance parameters decreased, decreased feed consumption and weight loss, resulting in reduced productivity [19]. Crowding stress leads to changes in behavior as well as common leg problems and susceptibility to diseases [20]. As a result of crowded stress, the immunity system is suppressed with the loss of yield, and

it sets the ground for the activation of opportunistic pathogens such as salmonella and disease formation [21].

The ventilation system is one of the important factors considered as the optimal conditions for livestock. Problems such as inadequate design of the ventilation system (insufficient number of exhaust fans and a smaller cooling area than the proposals) or incorrect placement of the sensors can cause problems in the supplies. The use and support of mathematical tools and computational techniques is crucial to ensure that the system works effectively [22].

Noise also has a significant psychological effect on the birds, and is also a potential source of fear in animals. Noise has been observed in worms exposed to stress, animals are piled up on a corner, or strangulated on a flat surface [23].

Fear describes an alarm situation in danger, a disturbance from danger, a harmonizing and at the same time harmonious energy, a psychophysiological response of the brain and neural system (Boissy, 1995). The ability to perceive a fearful violent animal is influenced by the experience, the hormonal state, and the magnitude of the causative agent [24]. The stress caused by fear in the wings stimulates the central nervous system, resulting in catecholamine secretion from the adrenal medulla, resulting in the conversion of glycogen, the energy source, to the stress factor. The corticosterone hormone also activates the accumulation of protein and fat in the body and these substances are used for vital events such as growth, egg production and regulation of the respiratory, circulatory and body temperature functions of the immune system. The release of the corticosterone hormone in stressed animals continues until the stress factor begins to rise from the middle to the corticosterone in the adrenal cortex. The depletion of adrenal cortex corticosterone hormone leads to exhaustion and death in the poultry [25].

Not being able to get adequate feed, poor maintenance conditions, various stress factors break the resistance of animals to both infectious diseases, and when they are extremely severe, they manifest themselves as severe diseases such as epidemic diseases. At the beginning of diseases that are common in chicken breeding for today. Diseases such as C.R.D., Leukosis, Marek's disease, Tuberculosis, Pullorum, Typhus gallinarum, Flower and diphtheria, Chicken colander, Infectious Laryngotracheitis, Winged encephalomyelitis and Gumboro [5].

Inadequate and/or unbalanced nutritional status lead to metabolic stress in animals [26,27]. The lack of adequate protein, amino acids and carbohydrates in the feed or lack of balanced distribution leads to many metabolic disorders [20,28]. In addition, the deficiencies of the minerals in the vicinity are accompanied by many problems [29]. As a matter of fact, minerals such as sodium, potassium and chloride play a very important role in the preservation of osmotic pressure in body fluids as well as acid-base balance in the body [30].

Stress factors are well known and kept at a minimum, which is a very important issue in terms of poultry breeding, animal welfare and productivity increase. We believe this compilation will be an important resource for veterinarians working in this area[31-34].

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