

Impact on body weight gain in broiler chicks due to electronic devices.

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Abstract

The present work deals with the studies of impact on weight gain in early-age broiler chicks through electronic devices. World wise more use of various electronic devices by the people in various sector concern to this study. Particularly in poultry industry the more use of electronic devices creates a serious health related problem in the early age broiler chicks. Broiler chicks provide protein rich food and a good source of animal protein for the human being. It also provide additional income source to the farmers to improve their economic condition, for that it is necessary to maintain the proper health condition particularly weight of the broiler chicks. In the developing field of technology and by using modern techniques it is necessary to manufacture many electronic devices those are popularly used by the peoples. Cell phone is one of the most popular and widely used electronic devices. The radiation emitted from the media of electronic devices in the environment causes various hazardous effect on the health of living organisms. Considering the environment of the poultry farming during the rearing period of early age broiler chicks, this study indicates that the continuous use of cell phones emits Electro-Magnetic Radiation (EMR) in the poultry environment, ultimately affects the health of chicks. For this study the experiment of three different groups was conducted to investigate the effect of electro-magnetic radiation on the body weight of early age broiler chicks. Group I was kept as a control and groups II and III were subjected both short and long duration of exposure of electromagnetic radiation respectively. From the above analysis it was found that long-term radiation exposure showed a reduction in average body weight compare to short-term radiation duration. Other details discussed in the text.

Keywords: Body weight, Broiler chicks, Electronic devices.

Introduction

Poultry industry is an important business based on agriculture and also having economic importance. The growth rate of poultry production in India is nearly higher than other sectors like crop husbandry, livestock production, gross domestic products etc. In this allied agricultural industry annual output of eggs was eight times more in the 1995 than early seventies. Poultry raised for meat production is called broiler. Broiler industry had started before three decades in India. Its negligible output of 4 million in 1971 reached to 190 million in 1990 and there is tremendous growth as well as has high potential to develop to higher extent as there is full scope and prospectus to the industry. Broiler chicks provide the deadly growing people with high protein-rich food and a good source of animal protein. It provides farmers with an additional source of income and helps to improve their economic status. Biological and economical point of view conservation and proper health condition of the broiler chicks in poultry farming is a very important task.

In this digital world, the electronic technology is developing faster and faster, many electronic products appear with advanced functions to facilitate, improve and even change the life of the whole society. Among all these electronic products, the computer and smartphone are thought to be most common because of a lot of benefits brought by them and seem to become the necessity in daily life, [1]. Electronics having various electrical circuit and including number of electronic components. Through the interconnections of these electronic components, the technique develops a device commonly known as electronic device. Recently various types of electronic devices used by the peoples in various sector. Technological innovations in the electronic devices change the results in between the benefit and harm, such as cell phone, iPad, laptop etc. Mobile communication technology increases the speed of communication and contact within poultry farming, making services delivery more efficient, [2].

Beneficial use of these electronic devices also hazardous effect to the life of living organism. Most of the electronic devices emit various range of electromagnetic radiation in the environment. Electromagnetic radiation produced by the electronic devices such as cell phone in the environment of poultry farming effects the weight of early-age broiler chicks. It has been observed in every position since the late 1990s. Considering the environment and weight gain of early age broiler chicks, this study reveals that the continuous use of mobile cell phones by people from various industries. Electro-Magnetic Radiation (EMR) was emitted in the environment due to the excessive use of cell phones. High frequency electromagnetic field can be responsible for bringing alterations in growth and development in ovo amniotic vertebrates, [3]. Different hazardous effects of electro-magnetic radiation (EMR) observed on the health of living organisms. Similarly hazardous effects of Electro Magnetic Field (EMF) are also developed on chick embryo health [4]. Electromagnetic radiation from Cell phone and cell tower affects the birds, animals, plants and environment, [5]. Various factors like light intensity, radiation frequency and duration of exposure affects the poultry environment. Exposure to radiation increased the mortality in chick embryos, [6]. Exposure of chick embryos to a 2G cell phone caused structural changes in different types of cells, [7]. Growth rate in the form of weight gain in early age broiler chicks is one of the most important factors influenced by radiation from the cell phone. Due to the exposure of various range of electromagnetic radiation some changes in behavioral and physical activity of the early age broiler chicks.

Methodology

Ninety, day old broiler chicks were procured from commercial hatchery and kept separately under house with normal environmental condition and these chicks reared by adopting deep litter system. The birds were fed with starter mash up to three weeks of age during the experimental period. These early age broiler chicks were randomly divided into three groups. Each group containing 30 numbers of early age broiler chicks and

named groups I, II and III. Group I Control Group (CG) was kept as a control and was not exposed to any electromagnetic radiation, and the remaining groups II Short Duration Exposure Group (SDEG) and III Long Duration Exposure Group (LDEG) were subjected to use of cell phone handset for electromagnetic radiation of both short and long duration exposure respectively. Daily exposure of short duration is three hours and long duration is six hours. Comparative study and effect of electromagnetic radiation with short and long duration exposure was evaluated on the basis of average body weight, overall body weight gain of the early age broiler chicks in different groups. The body weight of all the early age broiler chicks was recorded and average body weight and overall body weight gain was calculated for each group recorded at weekly intervals up to three weeks.

Results and Discussions

Comparative study and effect of electromagnetic radiation with short and long duration exposure was evaluated on the basis of average body weight, overall body weight gain of the early age broiler chicks in different groups. The body weight of all the early age broiler chicks was recorded and average body weight and overall body weight gain was calculated for each group recorded at weekly intervals up to three weeks. From the table 1 it is evident that the group II (SDEG) and group III (LDEG) shows variation in the values of weight gain as compare to group I (CG), The mean body weights in all the groups varied from (100.21 to 108.43 Gm) during first week, (221.47 to 241.56 Gm) in second week, and (311.74 to 372.38 Gm) at the end third week.

Table 1: Comparative effect on body weight gain of broiler chicks in different groups.

Experimental Groups	Average body weight (Gm) per weeks			Overall body weight gain (Gm)
	I	II	III	
Group I: CG	108.43	241.56	372.38	263.95
Group II: SDEG	102.64	233.85	338.27	235.63
Group III: LDEG	100.21	221.47	311.74	211.53

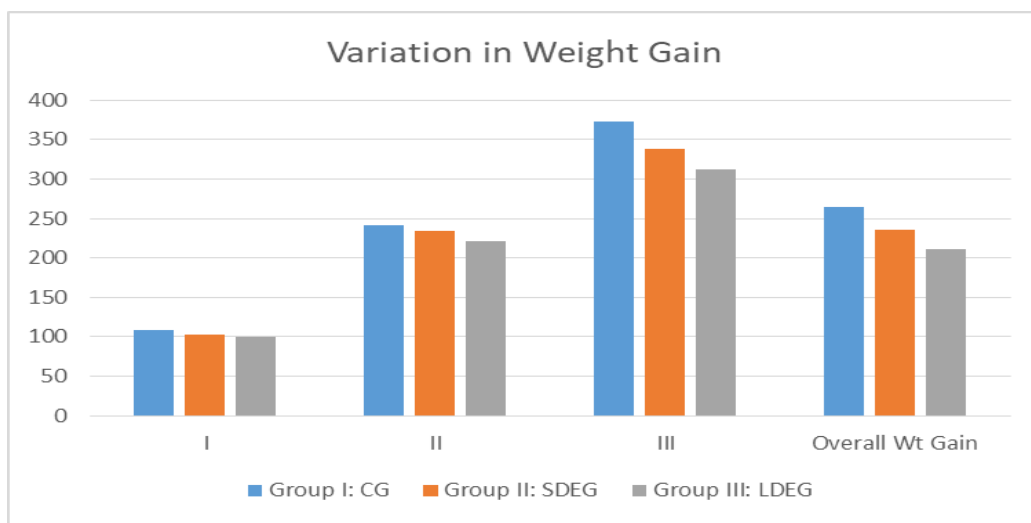


Figure 1 : Graph showing the body weight gain of broiler chicks in different groups.

These values show differences in the weights between different groups during the experimental period and at the end of third weeks of early age broiler chicks. During the first week the early age broiler chicks of group I (CG) shows higher body weights (108.43 Gm) than the other group II (SDEG) and group III (LDEG), the values of body weight of these groups shows (102.64 Gm and 100.21 Gm) respectively. During the second week the early age broiler chicks of group I (CG) shows higher body weights (241.56 Gm) than the other group II (SDEG) and group III (LDEG), the values of body weight of these groups shows (233.85 Gm and 221.47 Gm) respectively.

During the last week of the experiment that is at the end of third week the early age broiler chicks of group I (CG) shows higher body weight (372.38 Gm) than the other group II (SDEG) and group III (LDEG), the values of body weight of these groups shows (338.27 Gm and 311.74 Gm) respectively, these results are not correlate to the results of [8], he reported that no radiation effect on the body weight at hatching or at 7 days of age was detected.

From the data of body weights in different groups, it is evident that the overall gain in body weight among the group I (CG) of broiler chicks was highest (263.95 Gm) for those are the group II (SDEG) and group III (LDEG), the values of overall gain in body weight among these groups shows (235.63 Gm and 211.53 Gm) respectively. From the data it is also apparent that early age broiler chicks among the group II (SDEG) had better gain in body weight (235.63 Gm), than the chicks among the group III (LDEG) and values shows lower weight gain (211.53 Gm), these finding more or less similar to the findings reported by Shafey, T. M., *et. al.* [9], chickens exposed to different MF treatment had lower weight gain than those of the non-exposed treatment of MF at 39 days of age.

Conclusion

In conclusion this study has shown that the early age broiler chicks expose to long-term duration of electromagnetic radiation showed a reduction in average body weight compare to the chicks expose to short-term duration of electromagnetic radiation. Ultimately the overall gain in body weight of early age broiler chicks shows decrease values in group II (SDEG) followed by group III (LDEG). It may be due to the increase physical activity of the early age broiler chicks exposed to short and long duration of electromagnetic radiation, which in turns effects on the weight gain of the chicks.

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