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To Investigate the Effect of Microwaves Irradiated Water and Feeds On The Broilers.

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Abstract

In electromagnetic spectrum, microwaves radiation spans a range from 300 MHz to 300 GHz. These radiationshave been used in many devices that are used by humanbeings.They may be very harmful for living organisms. Bad effects of microwaves have also been investigated for several crops. This work investigates the effect of microwaves treated water and microwaves warmedfeeds to thebroiler chicken. 1100 Watt and 2450MHz power microwaveoven was used to irradiate chicken's drinking water and feeds.During investigations, many parameterssuch as temperature, humidity, quality of water and food were well maintained.In conclusion, measuring body weight may be a useful tool to estimate growth potential rather than using body height and length. The broilerused microwavedradiated water and feeds shows better growth rate as compared to others that used normal water and feeds and that used boiled water and warmed feeds.

Keywords: Microwave radiations (MW), Broiler, Microwave irradiated water and feeds.

INTRODUCTION

In everyday use of microwave devices has been increased the exposure of electromagnetic radiations in the environments. Microwave radiations being one of them and it expose harmful radiations on living organisms which of different effects on the living organisms. The effect of microwaves to living things depends on many aspects such as frequency range exposed and the duration time to the medium. Microwave radiations corrupts the DNA in the food to a level the body cannot recognize it. However the body wraps it in fat cells to protect itself from the dead food or it eliminates it fast. This may interfere with body's weight. It is well known that a nurse from Canada warmed up blood while transfusing it the patient, finally the patient died because of microwave irradiated blood. Microwave radiations are capable to make changes in permeability of the cell membrane walls in the plants as well as affecting the cell growth rate due to interaction with ions and organic molecules. The irradiated water by microwaves radiations may introduce changes in pH and electrical conductivity of water molecules. Use of water with

different molecular mobilities could affect drug dissolution of a dosage form and such profile of water might be modifiable using microwaves. There are many studies on the biological effects from electromagnetic radiation, only few studies on the effect of microwave water on the germination and growth rate of the plants shows good achievements. Chickens are essential components for supplying white meat in our meals. Therefore it would be necessary to identify the effect of feeding broilers with irradiated water and feeds. The objective of this research work is to investigate the changes that would occur to the growth rate of the broiler chickens after feeding using irradiated water and food. Specifically the study aims is to compare the rate of growth and physical characteristics of broiler chickens after being feed with microwave irradiated water and foods, normal water and foods, boiled water and warmed food. Results showed a difference between microwaves irradiated water and food with others with respect to height, length and weight.

MATERIALS AND METHODS

Experimental setup

The experiment was conducted in six weeks to investigate the effect of microwave irradiated water and food to the chicken growth. Investigation was carried out with an ordinary microwave oven. Water and chicken mash food were exposed to microwave radiations at a power level 700 Watt. The growth of the chicken was studied for 42 days. Three one day broilers chickens were bought to study the effect of microwave radiations. The chicken mash ware purchased locally from the market and divided into three groups. Chicken were put in three different chambers of the same cage. These chickens were chosen because of their fast growth rate during the period of the study as well as ability to add more weights in short duration. Throughout the experiment, the chickens were not treated with any kind of drugs. Table 1 illustrates the number of chicken in each chamber. Then, chicken in each group were weighed, individually. Chicken length was taken by measuring the length of stretched chick from the tip of the beak to tip of the tail using a ruler and recorded in centimetres (cm). Height was taken by measuring from the toe to the head. Chicken's measurement were taken in interval in each kind of bird are presented in tables.

Table 1.The distribution of chickens in each cage

experimental groups	**Number of chicken in a sample**
Ordinary water + ordinary food	1 (sample A)
Boiled ordinary water +warmed food	1 (sample B)
Microwaved water +microwaved food	1 (sample C)
Total	**3**

TREATMENTS

An ordinary microwave oven of power level 1100 Watt and 2450 MHz was usedfor boiling water and heated feeds. Clean tap water was divided it into three labeled containers. The first chicken was given water that had not been boiled at all and used as control. The second chicken was given water that had been heated to a boiling point using stove. The thirdchicken was given water that had been irradiated using microwave oven. Food for the first chicken was not heated at all. Second container was heated at 30^0C. The third container was microwaved at 30^0C respectively. Temperature was measured using clinical digital thermometer.Water and food containers were cooled(at room temperature) before feeding the chickens. This was done regularly once in a week. The chickens were feed on equal quantities day after day. The chickens were kept in same environment.

MEASURING CHANGES RELATED CHARACTERISTICS

Chickens were followed-up daily for 42 days measuring the specific parametersinevery 7 days. After a few days in feeding the chickens, the following measurements and observations were weekly recorded: Height (cm); length (cm); Weight (kg); color and texture of the feathersfor all chickens. The investigated parameters have been chosen because they give a general indication for the growth rate of chicken under the same environmental conditions. The height and length of the growing chickens ware measured using an ordinary ruler. Length was measured from the tail of the chicken to the head. Each chicken was observed with respect to change in length, height, weight and morphology of feathers. There are many different features of a chicken that can be measured to determine the extent of chicken growth and health. The following tables describe the changes during the course of the experiment.

Table 2: The chickens height (cm) for control, Boiled and microwave treated water and food

	Height(cm)					
experimental groups	Week1	Week 2	Week 3	Week 4	Week 5	Week 6
Ordinary water + ordinary food	6.858	9.525	11.43	14.0452	19.304	21.844
Boiled ordinary water +warmed food	6.858	9.652	11.938	14.224	20.066	22.352
Microwaved water +microwaved food	6.985	9.779	12.446	14.859	20.320	23.114

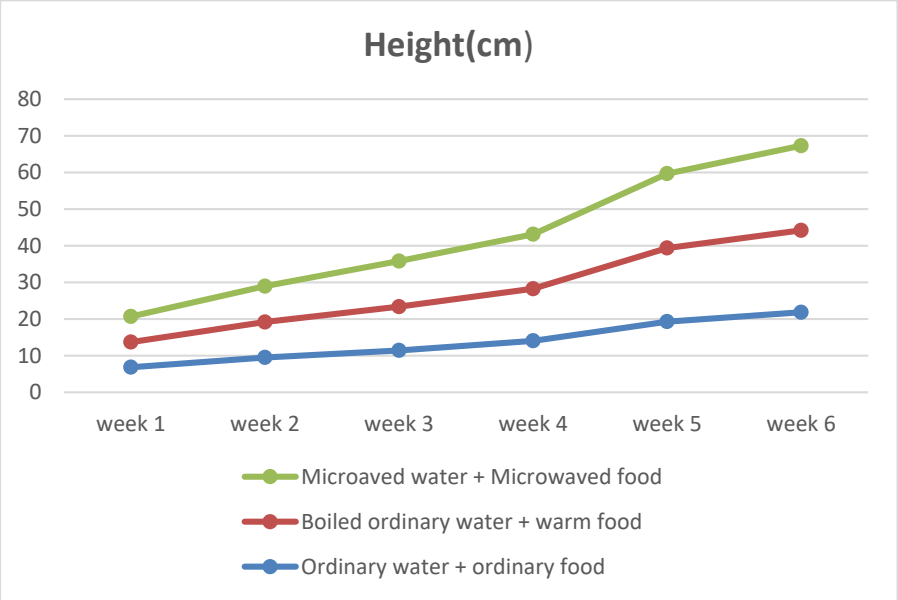
Table 3: The chicken's length (cm) for control, Boiled and microwave treated water and food

	Length(cm)					
experimental groups	Week1	Week 2	Week 3	Week 4	Week 5	Week 6
Ordinary water + ordinary food	10.16	12.7	19.05	20.955	26.156	33.02
Boiled ordinary water +warmed food	10.16	13.337	19.812	21.59	26.67	34.29
Microwaved water +microwaved food	10.16	13.97	20.060	22.606	27.305	35.56

Table 4: The chicken'sweight(kg) for control, Boiled and microwave treated water and food

	Weight(kg)					
experimental groups	Week1	Week 2	Week 3	Week 4	Week 5	Week 6
Ordinary water + ordinary food	157.6	323.4	506.3	815.3	1330.6	1765.6
Boiled ordinary water +warmed food	157.8	324.1	510.2	819.6	1334.3	1765.6
Microwaved water +microwaved food	158.4	329.6	518.7	828.8	1339.4	1765.6

Figure 1: The chickens height (cm) for control, Boiled and microwave treated water and food



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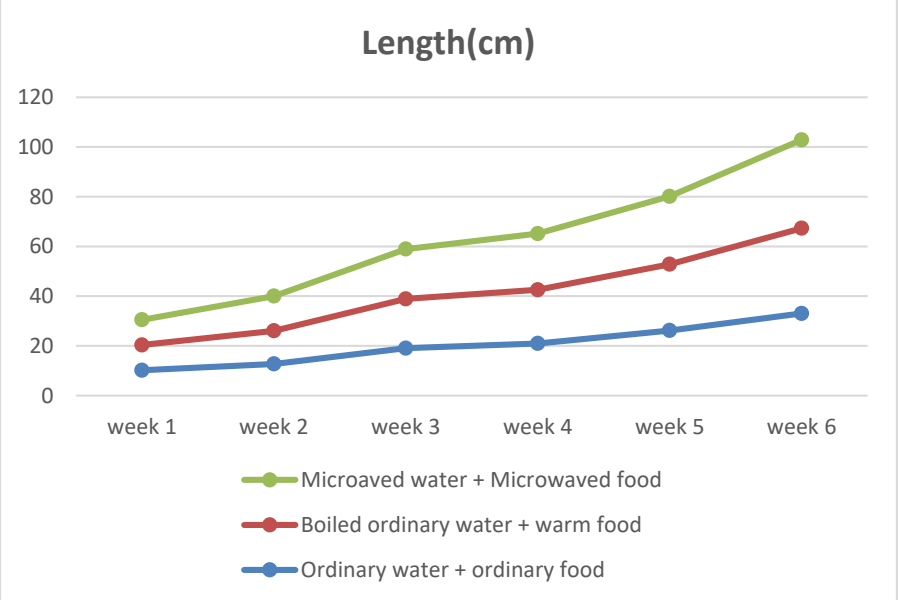

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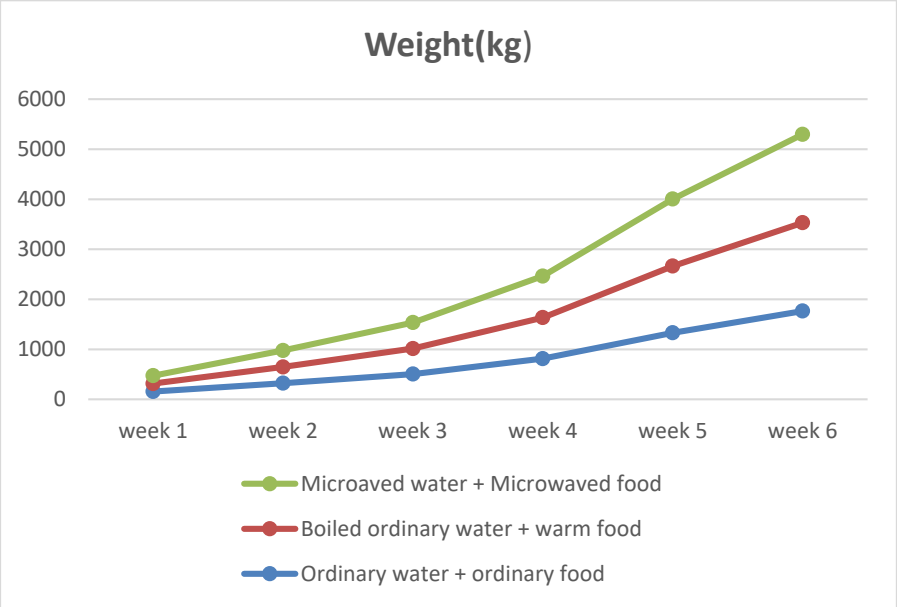

RESULTS AND DISCUSSION

The measurable parameters at every 7 days were carefully measured with a ruler and digital weighing machine. The height, lengths and weight were calculated for each chicken. Texture and color of the feathers were also observed at every week.The change in height,length and weight of each sample weretabulated in tables. These values were also plotted in graphs. The analysis of the results shows that the growth rate of sample is better than other samples.

CONCLUSION

Investigations were carried out to study the effect of microwaves irradiated water and feeds to the growth of broiler chickens. One chicken was feed with ordinary tap water and ordinary foods, for the second chicken was feed with boiled water and warmed foods using stove while the third chicken was feed with microwave irradiated water and foods. The analysis of the results indicated that, the broiler that was feed by irradiated water and feeds have better growth rates. The results may be also useful for enhancing the chicken layering for meat production and egg

layering projects. Overall results of this study show that irradiated chicken gives better growth rate as compared to normal water and food.

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