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Comparative Analysis of Balance Diets: Assessing Growth and Survival Rates in Newly Hatched Chicks

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Abstract:
We explored the impact of different diets on the growth and health of newly hatched chicks. Our experiment involved four groups that are consisting of 2 chicks, each group receiving unique diet: Pearl Millet, Pearl Millet and whole wheat bread, Pearl Millet and apple and commercial chicks' feed. Over a seven-day period, we clearly monitored the chick's progress thoroughly and observed a prominent change in their weight gain during the whole period of research. Our findings revealed that the groups fed Pearl Millet, Pearl Millet and Whole wheat bread and Pearl Millet and Apple experienced one mortality each, while chicks receiving commercial chicks feed thrived. This research underscores the significance of balanced nutrition for young chicks and highlights the varying effects of different diets on their development. We gained very postive results with few mortalities rate. The highest impact on nutrition was of commercial chick feed, which shows it contain all nutrients essential for a chick to develop. For a healthy and quick growth of chicks in short time and limited resources commercial chick best is the best options for the breeders in poultry farm or people who are fond of chicks as pet. Quick growth and good health with maximum survival ratio will ultimately benefit financially to respective persons. Our Research can be very beneficial for those who are finding best way to increase their poultry farm chick's number.

Keywords: Nutritional Strategy, Feed for Chick, Nutrition Impact, Major Dietary Source, Chick Development, Balanced Diet Importance, Best Nutrients

Introduction:

The production quantity of poultry products is increasing in the world economy with every passing day. The increase in chick quality is synonymous with the increase in the number of saleable chicks in terms of the poultry industry. In addition, in order to obtain high-quality products, one should start production with high-quality chicks as well as providing the ideal environmental conditions starting from the first day of incubation (1).

Chickens are one of the most popular kept poultry species in the world, and they are a major source of protein in human diets. The first day of life is the most important day in the life of chicks as it sets the foundation for their future well-being and performance. A chick is a young chicken,

especially a newly-hatched chicken. Chicks are small, yellow, and fluffy. Chicks are omnivores, eating grass, grain, worms, insects and even mice occasionally. Chicks are baby chickens! Baby chickens are chicks, 3 month old females are pullets (until they start laying eggs at about 6 months), adult females that lay eggs are hens, and males are roosters, cocks, or cockerels (2).

After a mother hen lays an egg, she broods it for almost 24 hours a day until it will hatch. At 21 days of incubation, a chick will emerge by pecking its way out of the egg. The little peeping balls of fluff grow extremely fast and double in size during their first two weeks. They start growing adult feathers nearly immediately, they reach full size by 20 weeks, and could lay eggs on their own at age 6 months (3).

Baby chicks start peeping at mom while still inside the egg, and the hen will cluck to baby! One day old, a chick can recognize the call of its mother. The chick stays close to mom for 12-16 weeks to stay warm and to figure out how to be a chicken! The baby chick is also instructed by the mother hen what to eat, how to drink, and socialize among the other chickens. Mother hens are very protective of their chicks and will protect them from predators (4).

These tiny-tiny peeping fluff balls grow very rapidly and double their size in their initial fortnight. They start developing adult feathers right from the start, reach full size after 20 weeks, and can already lay their own eggs at only 6 months of age. Nutrients are those food components essential for the survival, development, and reproduction of an organism. They are classified under two categories: Macronutrients and micronutrients. Macronutrients are needed in larger quantities, and micronutrients are needed in quantities smaller than those of macronutrients (5).

Baby chicks primarily eat commercial chick starter feed for the first few weeks of their life. This feed provides them with a proper diet and required elements to support growth and development. The older chicks may gradually be provided with a variety of other feeds, including grains, seeds, pulses, vegetables, fruits, and even food items like mealworms (7).

The major diet of young chicks is a commercial chick starter feed. The feed is prepared in such a way that it provides a complete and balanced diet comprising protein, vitamins, minerals, and other nutrients necessary for rapid growth and development. It is typically provided in crumble or mash. As the chicks grow, they can be gradually introduced to a variety of grains and seeds like corn, wheat, barley, millet, and oats (8).

Fruits and vegetables like berries, apples, bananas, and leafy greens such as spinach, lettuce, or kale can be fed to chicks in limited quantities. We conducted experiment on chicks by studying the effect of nutrition on their health. We are taking 8 chicks which are 2-3 days old. They are newly hatched chicks. We divided the chicks into 4 groups by separating them. Each group contain 2 chicks. First of all! We measured their weight using weight machine. Then we supply them with some particular nutrients like protein, carbohydrates, lipids and grains (9).

We nourish different groups of nutrients to every group by analyzing the impact of nutrition which can work for or against the development of the chick.

Materials and Methods

One-day-old chicks were obtained from a private hatchery following the standard incubation process for broilers. Eggs used for hatching were obtained from the breeding flock at 62 weeks of age and the eggs were placed in the incubator after stored for 24 h. For the quality classification of the chicks at hatching, 8 chicks were randomly chosen from the hatchery.

The day old chick quality has a great importance for hatcheries and also broiler producers. It is an indicator of hatchery success and assurance of broiler productivity. Chick quality is affected by a number of factors from the time of fertilization to placement time at broiler houses. Generally, these factors are classified as pre-incubation and incubation factors. These factors affects embryo development and chick quality, and in this way post-hatch broiler performance. Day old chick quality is assessed by considering some parameters as color, vitality, navel quality, yolk uptake,

leg confirmation, well formed beak, chick hatching weight, yolk free body weight and chick length.(3) Four groups (a, b, c, and d) were created, each with one chick, and the following dietary treatments were used in this study:

Method of weighting:

The major objective of this research was to develop equations to estimate bw and body composition using measurements taken with inexpensive instruments. We used four groups of chickens that were created with different genetic stocks and feeding programs.(2)

We made 4 groups of 4 different breeds, each group contain 2 chicks and total weight of each pair was done. A empty shoe box was taken as a helper in weighting chick and its weight was deducted from total weight.

Dietary treatments:

Group a: Bajra. Group b: Bajra + roti. Group c: Bajra + apple. Group d: Commercial chick feed (control group).the bajra meal was given to chick a. For seven days, we recorded each group's weight every day, although the feeds of the four groups varied. With the use of a cardboard box, we performed the weight of the chicks.

Group A: Group a, which received the bajra feed on day one, weighed 67g on day one and 45g on day two. Day 3=45g. Day 4=42g. Day 5=51g. Day 6=53g. Day 7=52g.

Group B: This group was fed bajra and roti, and after seven days, their weight was 64g on day 1 and 23g on day 2. Day 3=23g. Day 4=32g. Day 5=36g. 42g on day 6 and 51g on day 7.

Group C: After receiving the bajra+apple diet for seven days, group c's weight was 66g on day 1 and 25g on day 2, day 3=26g, day 4=23g, day 5=47g, 53g on day 6 and 51g on day 7.

Group D: Group d received the chicks' feed, and their weight over the course of seven days was 54g on day 1 and 75g on day 2, day 3=87g, day 4=98g, day 5=102g, 166g on day 6 and 202g on day 7.

Analysis of data:

Patterns of weight gain were noted for every group. To assess how different diets affected the weight gain of chicks, the data was studied.

Design of experiments:

Four treatment groups and daily weight measurements for seven days were part of this study's straightforward experimental design. This study employed a non-standardized weighing method (cardboard box) and had a limited sample size (one chick per group). By employing more accurate weighing techniques and expanding the sample size, future research could enhance this approach. The experimental design, nutritional interventions, weight measurement technique, and data analysis strategy employed in your study are described in this methodological section.

Results:

Small eggs constitute a high proportion of the eggs laid by pullets. The literature shows that chick hatching weight is strongly correlated with egg weight, but evidence on the influence of egg weight on hatchability and subsequent performance of chicks is less certain.(5)

The aim of this experiment was to determine the profit returned at 1 weeks by chickens hatched from eggs ranging in weight from 54 g. to 202 g. at one gram intervals(5) and is diverse among 4 different groups.

Main findings

Summary of results:

Clearly state the primary outcomes of your body describe key trends and patterns to identify and describe any notable trends or patterns in the data. Then correlates the importance of any significant correlation between variables. For data analysis and its interpretation, explain the meaning and significance of the results and for statistical analysis, report on the statistical methods used and the result of these analysis. Data visualization can be shown by use tables, figures, or graphs to illustrate key findings.

Comparison and contrasts

Comparison to existing research:

Discuss how your findings align with or differ from previous studies. . Similarities and differences: Highlight any similarities or differences between your results and those of others. . Implications of comparisons and explain the implications of these comparison for the field.

Implication and application :

Practical application discuss the potential practical applications of your findings. . Impact: Explain the potential impact of your research on the field, industry, or society. . Future directions: Suggest potential avenues for future research or applications.

1. Chick mortality timing:

We will record the specific day each chick died. This helps identify whether the timing of death correlates with any changes in diet, environmental conditions, or health issues.

Day	Group	Status
Day 1	A	Both alive
	B	Both alive
	C	Both alive
	D	Both alive
Day 2	A	Both alive
	B	1died 1 alive
	C	Both alive
	D	Both alive
Day 3	A	Both alive
	B	1died 1 alive
	C	1died 1 alive
	D	Both alive
Day 4	A	Both alive
	B	1died 1 alive
	C	1died 1 alive
	D	Both alive
Day 5	A	1died 1 alive
	B	1died 1 alive
	C	1died 1 alive
	D	Both alive
Day 6	A	1died 1 alive
	B	1died 1 alive
	C	1died 1 alive
	D	Both alive
Day 7	A	1died 1 alive
	B	1died 1 alive
	C	1died 1 alive
	D	Both alive

2.dietry differences:

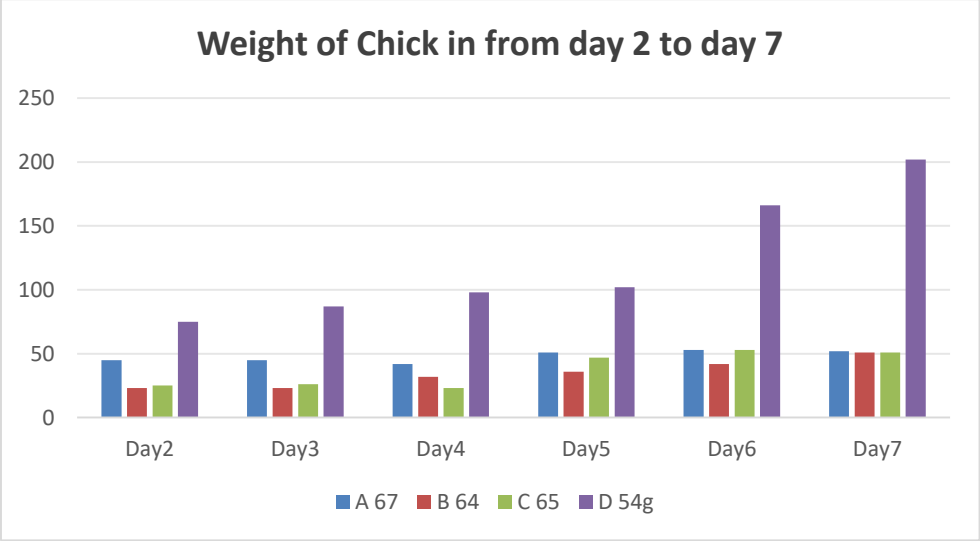
We will examine what type of diet each group received. For example : Group a may have receive a standard or nutrient rich feed group b may have received a low quality or experimental feed. Any modifications made to the feed during the experiment (e.g., increase in protein, change in feed brand, use of supplements) will be documented.

3. Comparison of weight between chicks:

We observed the chicks continuously for 7 days. Same temperature was provided to them i.e37·C which is considered ideal for their efficient survival.

Following table shows our results which we obtain:

Following Graph shows Weight from Day 2 to Day 7



4. Purpose of the comparison:

The goal is to correlate the diet with the survival and health of the chicks. .if chicks from one group died earlier or more frequently, it could suggest that their diet was less effective or harmful. .on the other hand, if one group showed better growth and survival, it implies that their diet had a positive impact . We will analyses the impact of different diets on chicks. The main point is that the chicks experienced an increase in weight. This weight gain occurred because they were provided with proper feed and nutrition . The feed given to the chicks contained significantly to their growth and development. .nutrition play a crucial role in the overall health and weight gain of chicks. When chicks are given a balanced diet that includes proteins, vitamins, minerals, and energy sources, their bodies are able to grow at an optimal rate. Proteins support muscle development, while vitamins and minerals help strengthen the immune system and support metabolic processes. .as a result of receiving the right nutritional support the chicks in this study showed a noticeable improvement in weight compared to those on poor or less balanced diets. This highlights the direct impact of proper nutrition on chick growth and performance.

Discussion

Litter quality is one of the essential factors affecting the welfare of broilers since birds spend all of their lives on litter material. The purpose of the experiment that done on the newly hatched chicks to check the nutritional effect on their health are how nutrients impact on their health, growth and development. Nutrients that are provided through the food source have very effective function and role in the different stages like many process immune functions, gut health, overall health and in growth and development (10).

In the experiment methodology is very important to conduct safely experiment. The methodology of our experiment include that firstly we divided chicks into groups. The newly hatched chicks that are about 3-4 days old. We take 8 chicks and divided them in 4 groups. Each group carry 2 chicks (11).

We provided them nutrients like protein, carbohydrate, lipid, etc. In the food for their growth and development. We kept all chicks in same environment (12).

Group A: We give Pearl Millet (Bajra) as a food to chicks. This food is full of nutrients like protein, fiber, iron, calcium, phosphorus, etc (13-18).

Group B: We give Pearl Millet and Whole wheat bread (roti) to chicks as a food. This food enriched with protein, iron, carbohydrates, fiber, B vitamin (14-20).

Group C: We provided food to these chicks are Pearl Millet and Apple. This food contain nutrients like protein, fiber, iron, antioxidants and vitamin C (15-19).

Group D: We give chicks feed to these chicks that are full of nutrients with protein, carbohydrate and lipids (16-17).

We checked or observed daily the weight gain or not gain by the chicks through the weight machine. We conduct experiment about 5-7 days and observed their growth. On day 1 all have weight about 66 g but Group D have 54g weight (21-22-23).

On day 2 one chick from group B died. On day 3 one chick of Group C died. On day 5 one chick from Group A died. But both chicks of group D survived (24).

The weight gain by the chicks of Group A, B, C are approximately51g-52g. While chicks of Group D are weighted 202g. They gain weight and grew. The chick feed have nutritive effective on their health which beneficial for them and good for them (25).

This chick feed is starter feed for them which is very effective for their optimal growth and health. In this feed every nutrients like protein, carbohydrates, lipids, vitamins and minerals are use in equal proportion (26).

Conclusion:

A major change occurs in the source of nutrients in the post-hatch bird as the yolk is replaced with an exogenous diet and the hatchlings are switching from utilizing a yolk nutrient-based diet to a solid external feed diet. Therefore, the few days pre- and post hatch are critical for the development and survival of commercial chickens and turkeys. Birds hatch with an immature gastrointestinal tract – with the yolk sac still attached, and they do not utilize dietary carbohydrates and amino acids very well. Drawing upon its limited body reserves during the first few days after hatch, the chick undergoes rapid physical and functional development of the gastrointestinal tract in order to attain the capacity to digest feed and assimilate nutrients.

The highest weight impact was shown by commercial chick feed on the health and quick weight gain of the chicks. The weight of group D that fed with commercial chick feed went from 54g to 202g in just 7 days, which is a very prominent change.

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