



EVALUATING THE EFFECT OF ORAL REHYDRATION SOLUTION (ORESOL) AS A GROWTH ENHANCER FOR COBB BROILERS

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ABSTRACT

This study evaluated the effects of Oral Rehydration Solution (ORS/ORESOL) as a growth enhancer for Cobb broilers using quantitative method, specifically true experimental design. It was done by performing the Cobb Broiler Management at Corro's residence in Brgy. Seven Hills, Maasim, Sarangani Province. It began with the weighing of the actual live weight of all replicates in both control and experimental groups, and they both displayed the same results of 40g. This makes the basis to compare the results of mean actual live weight after the application of ORESOL among all the replicates in both groups for 5 weeks. Consequently, the results revealed that the experimental group obtained a higher average weight gain after 5 weeks of ORESOL application as evidenced by the average of 632.24g, compared with the control group with an average weight gain of 430.32g. Therefore, ORESOL is effective as a growth enhancer for Cobb broilers. Furthermore, since the p-value of 0.00 is lesser than $\alpha=0.05$, thus there is enough evidence to say that there is a significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers. Hence, it is recommended that ORESOL may be used as a growth enhancer and may be applied at varying concentrations, and is suggested to apply thrice a week to other breeds of chicken to avoid harming them.

Keywords: *Evaluation, Effects, Oral Rehydration Solution (ORS/ORESOL), Growth Enhancer, Cobb Broilers, Actual Live Weight*

INTRODUCTION

The poultry industry is one of the most dynamic sectors of international agribusiness. Consequently, global research on meat production indicates that poultry is the fastest-growing livestock sector, particularly in developing nations. The Philippines is not an exception, as the prognosis for the country's chicken industry appears positive, as demand for chicken products is anticipated to increase alongside the country's population and income growth. However, the Philippine broiler industry is threatened by inexpensive imports due to its high production costs (Chang, 2007).

Moreover, the survival and expansion of the Philippine broiler industry are contingent on its ability to compete globally, which is primarily reliant on the effectiveness of its production system. As an alternative to the goal of enhancing the economic status of poultry production, researchers have revolutionized the application of feed and water additives by emphasizing organic or natural supplements rather than synthetic medications (Zeweil et al., 2006).

In poultry nutrition, synthetic growth enhancers and supplements are costly, typically unavailable, and harmful to birds and humans. Subtherapeutic levels of antibiotics administered to poultry as growth promoters may lead to the emergence of antibiotic-resistant bacteria, which are detrimental to animal and human health. Hence, in this study, the researchers were motivated to conduct experiments that used other substances that may enhance the growth performance of the Cobb broilers (Zeweil et al., 2006).

Accordingly, Oral Rehydration Solution (ORESOL) is an oral powder that contains a mixture of glucose, sodium chloride, potassium chloride, and sodium citrate. After being dissolved in the requisite volume of water, it is intended for the prevention and treatment of dehydration due to diarrhea, including maintenance therapy. Thus, with these components of ORESOL that the researchers found it motivating to explore the potential of ORESOL as a growth enhancer for Cobb broilers by testing it among these chickens for a given period of time and evaluating its effect thereafter.

Objectives of the Study

The success in evaluating the effects of Oral Rehydration Solution (ORESOL) as a growth enhancer for Cobb broilers was attained by doing these subsequent tasks:

1. Determine the mean actual live weight of the Cobb broilers in control and experimental groups before the application of ORESOL.
2. Determine the mean actual live weight of the Cobb broilers in control and experimental groups after the application of ORESOL.
3. Determine the significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers.

Research Questions

Through the objectives of the study, the researchers answered the following scientific questions.

1. What is the mean actual live weight of the Cobb broilers in control and experimental groups before the application of ORESOL?
2. What is the mean actual live weight of the Cobb broilers in control and experimental groups after the application of ORESOL?
3. Is there a significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers?

Hypothesis of the Study

Ho¹ There is no significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers.

Scope and Delimitation of the Study

This study evaluated the effects of ORESOL as a growth enhancer for Cobb broilers. To achieve effectively this study, the researchers did these procedures of Cobb broiler management. They prepared ten pens, with the floor dimension of 20cm by 25cm each that accommodated one Cobb broiler for each pen. These pens were constructed at Corro's residence in Brgy. Seven Hill, Maasim, Sarangani Province, a conducive place for poultry raising. The walls and floors of the pens were disinfected with Lysol after washing with detergent and water. Litter materials made of old newspapers were used for the first two weeks of chicks. Clean and disinfected feeders and waterers were set in a place accessible to the Cobb broilers.

Furthermore, each pen was properly labeled with a number for easy identification of control and experimental groups. In addition, a 25-watt electric bulb was placed at the center of each pen, one foot above the floor. The distance of the bulb was adjusted by pulling it away from the floor based on the response of chicks, weather conditions, and feather growth. The bulb was removed during the third week or when the feathers are fully grown. In terms of feeding, Integra 2000 was used. The amount of feeds in each week is as follows: week 1 (1 tbsp), week 2 (2 tbsp), week 3 (3 tbsp), week 4 (4 tbsp), and week 5 (4 tbsp). During feeding, 0.5 liters of water was given to all Cobb broilers, while for the experimental group, the Cobb broilers' water rations were applied with 4.1g of ORESOL each.

Every week, the weight of the Cobb broilers was measured and documented for comparative results purposes. After 35 days or 5 weeks of raising the Cobb broilers, their final actual live weight was taken for

analysis of the effect of ORESOL as a growth enhancer. This study was done in the academic year 2022-2023.

Significance of the Study

To Environmental Science, the results of this study may provide an opportunity for further studies to conduct where the use of medicinal plants may be considered as a growth enhancer aside from ORESOL in order to maximize the potential benefits of plants, thereby formulating varying concentrations for Cobb broilers' growth performance.

To the Community, it investigates the use of a natural, cost-effective supplement to enhance poultry growth, which can benefit small-scale poultry farmers who may not have access to expensive synthetic or chemical-based products.

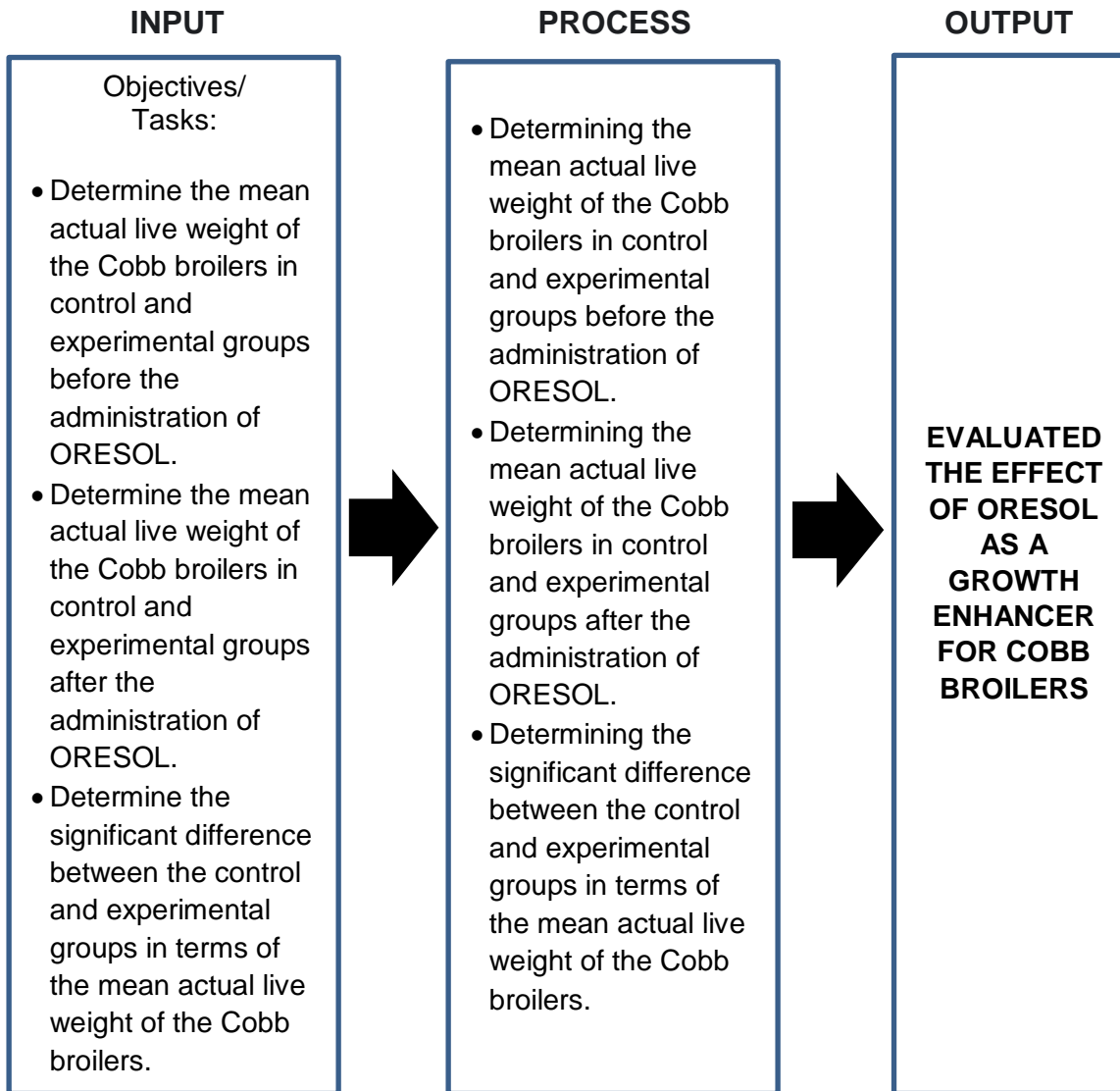
To STEM students, this study may help them improve their scientific skills and problem-solving skills by conducting experiments that provide new discoveries.

To Future Researchers, the recommendations herein offered may help them explore other investigations concerning other sources of growth enhancers such as medicinal plants in order to provide innovation for poultry-raising of agricultural farmers.

Research Gap

After conducting a preliminary search, it appeared that there have been currently no research specifically investigating the use of Oral Rehydration Solution (ORS/ORESOL) as a growth enhancer for Cobb broilers. This made a potential research gap in the present study where it investigated the effects of using ORESOL as a growth enhancer for Cobb broilers, compared to other commonly used growth enhancers such as antibiotics or probiotics.

Conceptual Framework of the Study



METHODOLOGY

The objectives of this study were accomplished using a quantitative method, specifically a true experimental design. The research concentrated on scientific experimentation and was conducted using statistical analysis (Pubrica-Academy, 2020).

Variables of the study

The independent variable of the study was the application of the ORESOL in the water ration of the Cobb broilers, while the dependent variable was the effect of the ORESOL as a growth enhancer on the Cobb broiler. On the other hand, the control variable of the study was the water without the ORESOL.

Statistical Analysis

The acceptance or rejection of the null hypothesis, i.e., there is no significant difference between the control and experimental groups in terms of the mean live weight of the Cobb broilers., One-way Analysis of Variance (ANOVA) was used.

All tests were done at a 0.05 level of significance.

RESULTS AND DISCUSSIONS

Mean Actual Live Weight of the Cobb Broiler Before ORESOL Application

This study measured the mean actual live weight of Cobb broilers in both control and experimental groups before ORESOL application. Table 1 shows their mean live weight.

Table 1. Mean Actual Live Weight of the Cobb Broilers Before ORESOL Application

REPLICATES	LIVE WEIGHT	
	Control Group	Experimental Group
Cobb Broiler 1	40g	40g
Cobb Broiler 2	40g	40g
Cobb Broiler 3	40g	40g
Cobb Broiler 4	40g	40g
Cobb Broiler 5	40g	40g

The table indicates that the mean actual live weight of all replicates in both control and experimental groups displayed the same results of 40g. This makes the basis of the researchers to compare the results of mean actual live weight after the application of ORESOL among all the replicates in both groups for 5 weeks. According to Akinbobola (2022), a day-old broiler chick weighs 40-45 grams. The weight of a broiler helps identify the optimal quantity of feeds to give broiler chickens. It also minimizes overfeeding, which can lead to loss of profit, and helps farmers find the right balance for their birds. When used properly, this will help ensure your chicken is healthy and growing at a healthy rate.

Mean Actual Live Weight of the Cobb Broiler After ORESOL Application

This study measured the mean actual live weight of Cobb broilers in both control and experimental groups after ORESOL application to their water ration for 5 weeks. Table 2 shows their mean actual live weight.

Table 2. Mean Actual Live Weight of the Cobb Broilers After ORESOL Application

REPLICATES	CONTROL GROUP					AVERAGE WEIGHT GAIN	EXPERIMENTAL GROUP					AVERAGE WEIGHT GAIN
	WEEK						WEEK					
	1	2	3	4	5		1	2	3	4	5	
Cobb Broiler 1	100	124	336	572	780	382.4g	110	332	600	834	962	567.6g
Cobb Broiler 2	100	194	442	718	894	469.6g	130	290	632	958	1300	662g
Cobb Broiler 3	80	178	426	704	844	446.4g	140	300	562	826	1460	657.6g
Cobb Broiler 4	70	148	392	616	746	394.4g	130	296	642	808	1740	723.2g
Cobb Broiler 5	80	198	444	738	834	458.8g	120	244	530	880	980	550.8g
AVERAGE						430.32g	AVERAGE					632.24g

It can be construed from the table that the experimental group obtained a higher average weight gain after 5 weeks of ORESOL application as evidenced by the average of 632.24g, compared with the control group which only obtained an average weight gain of 430.32g. The disparity in their average weight gain after 5 weeks in each replicate in the experimental group ranges from 852g to 1,610g, while in the control group, each replicate obtained an average weight gain that ranges from 680g to 794g. Hence, it can be concluded that replicates with ORESOL application in their water ration (experimental) exhibited better growth performance than the replicates without ORESOL application in their water ration. Therefore, ORESOL is effective as a growth enhancer for Cobb broilers.

Iwasaki et al. (2000), oral rehydration solution (ORS) is a mixture of water, salts, and sugar, which is used to replenish fluids and electrolytes lost due to dehydration. While ORS is primarily used to treat dehydration in humans, it has also been used in poultry production as a means of improving the growth and health of chickens. Studies have shown that providing ORS to chickens can help to improve their growth rates and overall health. For example, a study published in the International Journal of Poultry Science found that supplementing broiler chicken feed with ORS significantly improved their growth performance, compared to chickens fed a control diet without ORS. The researchers attributed this effect to the fact that ORS helped to maintain proper hydration and electrolyte balance in the birds, which allowed them to more efficiently utilize nutrients from their feed.

Significant Difference Between the Control and Experimental Groups

The aforementioned data were subjected to statistical analysis using the One-way Analysis of Variance (ANOVA) to determine if there is a significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers. Table 3 shows the results that statistically indicate after five-week observations.

Table 3. Difference Between the Control and Experimental Groups in Terms of the Mean Actual Live Weight of the Cobb Broilers

WEEK	P-Value Two-Tail	T-Crit Two-Tail	INTERPRETATION
1	0.00	2.31	There is a significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers.
2	0.00	2.31	
3	0.00	2.31	
4	0.00	2.31	
5	0.02	2.31	

The table shows the p-value of 0.00, 0.00, 0.00, 0.00, and 0.02 with the same T-Crit value of 2.31 for weeks 1, 2, 3, 4, and 5, respectively. Since the p-value is lesser than $\alpha=0.05$, thus the researchers rejected the null hypothesis. Therefore, there is enough evidence to say that there is a significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers.

Summary of Findings

The evaluation of the effects of Oral Rehydration Solution (ORS/ORESOL) as a growth enhancer for Cobb broilers was done by performing the Cobb Broiler Management. It began with the weighing of the actual live weight of all replicates in both control and experimental groups, and they both displayed the same results of 40g. This makes the basis of the researchers to compare the results of mean actual live weight after the application of ORESOL among all the replicates in both groups for 5 weeks. Consequently, the results revealed that the experimental group obtained a higher average weight gain after 5 weeks of ORESOL application as evidenced by the average of 632.24g, compared with the control group which only obtained an average weight gain of 430.32g. The disparity in their average weight gain after 5 weeks in each replicate in the experimental group ranges from 852g to 1,610g, while in the control group, each replicate obtained an average weight gain that ranges from 680g to 794g. Therefore, ORESOL is effective as a growth enhancer for Cobb broilers. Furthermore, the p-value of 0.00, 0.00, 0.00, 0.00, and 0.02 with the same T-Crit value of 2.31 for weeks 1, 2, 3, 4, and 5, respectively indicated that since the p-value is lesser than $\alpha=0.05$, thus the researchers rejected the null hypothesis. So, there is enough evidence to say that there is a significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers.

Conclusions

Based on the results of the study, it can be concluded that the application of ORESOL to the water ration of Cobb Broilers is effective in enhancing their growth performance since there is a greater disparity in the mean of actual live weight among the replicates in control and experimental groups after the 5-week observations of ORESOL application. Also, statistically, there is enough evidence to say that there is a

significant difference between the control and experimental groups in terms of the mean actual live weight of the Cobb broilers.

Recommendation

Considering the summary of findings and conclusions, the researchers recommend the following:

1. The ORS (Oral Rehydration Solution) may be used as a growth enhancer for Cobb Broilers.
2. The poultry farmers may apply ORESOL to the Cobb Broilers thrice a week to avoid harming the chickens.
3. Poultry raisers may test the different concentrations of ORS (Oral Rehydration Solution) to observe its effects on the chickens.
4. Future researchers may test the ORESOL on other chicken breeds to determine if it will produce the same effect as the Cobb Broilers.
5. Also, future researchers may dwell on studies relative to other possible uses of ORS (Oral Rehydration Solution) aside from using it as a growth enhancer for Cobb Broilers.

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