

BIBLIOGRAPHY

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ABSTRACT

The study was conducted at BSU Poultry Experimental station Balili, La Trinidad, Benguet, from April 23 to June 16, 2011 to determine the effect of Atovi feed premix on the growth performance of Sunshine chickens.

Eighty (80) day old Sunshine chicks to 55 days were used. These were randomly distributed into two (2) treatments. Each treatment was replicated four (4) times with ten (10) birds per replication, making a total of forty (4) birds per treatment. Data gathered were analyzed using the T-test.

Statistical analysis revealed no significant differences among the treatments in terms of initial weight, final weight, gain in weight, average daily gain, and feed conversion ratio. No cases of mortality and morbidity among the birds were also incurred. On the other hand, highly significant differences in no Atovi premix (3.112) and w/ 5g Atovi premix/kg feeds (3.245) respectively in kilograms were observed in the feed consumption. The average daily gain has a grand mean of 0.022 kg and feed consumption ratio has a grand mean of 2.521.

On the return on investment, thou this parameter was not subjected to statistical analysis the result showed that a slightly higher ROI was realized from the birds given atovi premix with an ROI of 3.61 % compared tp 3.57 % realized from the birds not supplemented with atovi.



Based on the results of the study, it is revealed that adding atovi into the bird's diet at the level of 5g/kg feed did not reduce nor improve the growth performance of the birds. It is also revealed that the atovi premix when added into the bird's diet at the level mentioned above, can take the place of vetracin, the one usually used to medicate the drinking water of birds.



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INTRODUCTION

Broiler raising is one of the phases of agriculture that is continuously progressing. Many raisers are into it and it is even their major source of livelihood. Raising broilers is preferred over the other animals like pigs and cattle because broilers can be raised in a shorter period of time, hence, the quicker turn-over of investments. Besides, many Filipino prefer to buy broiler meat compared to other meats like pork and beef because it is much cheaper in price than and as nutritious as pork and beef.

However, many meat consumers are now starting to be conscious on the food they eat and with this they prefer to meat derived from organically produced animals or from animals that are at least free of antibiotics/chemical residues.

To meet the above demand of meat consumers, some broiler raisers are now shifting to organic farming or are into the use of feed additives that results to the production of broiler meat free of antibiotic/chemical residues. One of these feed additives recently developed for animals is the Atovi premix and this is what the researcher wants to find out in this study i.e. the effect of Atovi premix on the growth performance of Sunshine chicken.

Atovi according to the Vim-Vertex and Company, Inc (2010) or the manufacturer is a Filipino-invented product based on molecular alteration, nuclear reaction and nanotechnology. It is a feed premix powder made from vitamins and minerals. However, it is radically different from conventional feed pre-mixes in the market. It has no medication and nutritional value due to molecular alteration making the final product with one long molecular chain with revolutionary effects on the physiology and immune system of livestock.



Also, the company claims that Atovi corrects and maintains the digestive system properly. Through this, all nutritional and medication inputs are absorbed and utilized properly and efficiently. Proof of this is the almost total absence of undigested proteins in the manure and the very low ammonia fumes which produce foul odors ending up into an instant non-pathogenic and organic fecal waste and further decomposition is not needed.

The result of the study, if found feasible, will benefit not only the researcher, herself but also other researchers and the chicken growers themselves. It can serve as a guide to the chicken growers to improve their production and to other researchers; it can serve as a reference in making follow-up studies.

Generally, the study aimed to determine the growth performance of Sunshine chickens when supplemented with atovi feed premix. Specifically, this study aimed to:

1. Measure the growth performance of sunshine chickens given diets with atovi feed premix in terms of gain in weight, feed and water consumptions, feed conversion ratio, and the morbidity and mortality rates.
2. Find out the profitability of raising sunshine chickens supplemented with atovi feed premix.

The study was conducted at the BSU Poultry Experimental House station Balili, La Trinidad, Benguet, from May to July 2011.



REVIEW OF LITERATURE

Acker (1983) said that the wide acceptance of feed additives in poultry is attributed to their well-established benefits of improving growth rate, feed conversion and reducing mortality and morbidity. He also stated that feed additives serve as catalysts in digestion and metabolism of nutrients even if given in small amounts.

CardandNesheim (1972) said that the addition of additives in poultry feeds will often improve the rate of weight gain and feed efficiency of growing chicks and provides all the essential nutrients in adequate amount. Likewise Pondetal (1995) pointed out that feed additives will improve growth rate, feed efficiency, and those of more specific nature that are used for other purposes such as control of internal and external parasites, insects, pest, or a wide variety of infectious diseases.

Cunha(1981) said that higher levels of nutrients and feed additives should be fed with caution since some nutrients can cause harmful effects if used at too high level.

Frona (1972) mentioned that using feed additives do not only make the production of animals economical but also help in the control of disease.

Tinoyan (2009) opined that broilers are fairly good and fast growing birds under suitable conditions but are less resistant to disease and more to have developed disorders which are not likely in the production in poultry. This brought about the development of poultry strain that can grow relatively fast and less in intensive production system. Among these is the sunshine chicken. The sunshine chicken is productive even in an adverse terrain such as in the highland and is resistant to disease. They are also a free-range strain but could be raised in confinement. Sunshine chicken raised intensively their intake and provide additional nutrient such as vitamins.



West (1987) defined feed additive as a substance added to compound ration or protein in concentrate in the course of manufacturing for some specific functions such as stimulate growth and improves the efficiency of feed utilization.

Atovi is made from vitamins and minerals feed premix that improves the performance and efficiency of a cell of the animals (land, air and aquatic) body constantly and continuously charge the mitochondria of all of the Krebs cycle.

Atovi induces natural detoxification or expulsion of harmful compounds or xenobiotics such as drugs, natural poisons and antibiotics on the cellular level. (www.alibaba.com2007)

The benefits attained in using atovi feed premix are as follows: faster growing period, increase profitability, lower feed conservation or feed intake, higher livability, improved and enhanced breeding operations, more harvests per year good sizes of eggs and egg shell quality, longer laying period, minimal medications, lower power and water expenses, elimination of chemical for treating manure, demand higher farm gate price due to superior meat quality, healthier and safer produce (Meat, eggs and milk) tastier and leaner meat/eggs/milk without the rancid smell, low cholesterol, free of antibiotic and chemical residues, thin back fat, high carcass percentage, environment-friendly waste / less ammonia, pathogen-free and dry manure with no foul or odious smell, power bacterial load, higher motility greater uniformity in litter/brood size and weight, higher hatchability percentage, early return to heat, prevent scouring and high resistance to bacterial and viral infections such as hogs-porcine reproductive and respiratory syndrome (hogs-PRRS), hog cholera/flu, coccidian, foot and mouth disease (FMD), non communicable disease (NCD), and dermatitis.(www.atovianimalg2.com2007)



According to the Vim-Vertex and Company, Inc (2010), as cited in the website www.atovianimalg2.com, the composition of Atovi is as follows:

<u>INGREDIENT</u>	<u>PER 10 LB</u>
Vitamin A	12,000,000 IU
Vitamin D	2,000,000 IU
Vitamin E	6,000,000 IU
Vitamin B1	3,000 mg
Vitamin B6	4,000 mg
Vitamin B12	4,000 mg
Calcium Panthothenate	22,000 mg
Choline	250,000 mg
Lysine	7,500 mg
Copper	1,300 mg
Pottasium	42,500 mg
Iodine	750 mg
Iron	20,000 mg
Zinc	27,000 mg
Calcium	30,000 mg
Magnesium	2,300 mg
Sodium	30,000 mg
Calcium Carbonate	1 0 lb



MATERIALS AND METHODS

The materials and equipment used in the study were as follows: eighty (80) heads of Sunshine chicks, Atovi powder, commercial feeds, brooding cages, weighing scale, incandescent bulbs, disinfectants, vaccines, drinking troughs, feeding troughs, pails, record book, empty sacks, carton sheets, news paper sheets and cleaning materials.

The Sunshine broiler chicks were purchased from one of the Bounty Fresh chicken dealers and suppliers in the locality.

A week before the birds arrived, the brooding cage was cleaned and disinfected with bio seed solution. Likewise a day before the chicks arrive, the floorings was covered with odd newspapers sheets. These served as feed receptacles at the start of the brooding period, helped conserve heat inside the brooding cage and helped prevent tripping of the chicks into the floor. The source of heat was also switched on two (2) hours prior to the arrival of the chicksto make sure the brooding cage was warm as the chicks were placed into it.

Upon arrival, the eighty (80) birds wererandomly distributed into two(2) treatments followingthe T-test which is a method of analysis. Each treatment had four replications with ten (10) birds per replicate, making a total of forty (40) birds per treatment.

The two treatments were as follows:

T₀– noatovifeed premix

T₁ - 5g atovi feed premix/kg feed.

All the experimental birds were subjected to the same care and management from the start to the end of the study, in all aspect except, on their diets depending on what treatment where these birds belong. Those in the control group were fed with pure commercial feeds



i.e. with no atovi feed premix supplementation. On the other hand, the birds in treatment 1 were fed with commercial feeds plus atovi premix given at the level of 5g/kg feed offered.

Feeding was done three (3) times a day at 7 o'clock in the morning, 12 noon and at 5 o'clock in the afternoon from the start until the end of the study. For the first four weeks, the birds were given broiler starter mash. From the fifth week until the end of the study, their feeds was shifted to the broiler finisher mash. The amount of feeds was measured and recorded before it was given to the birds. Leftover feeds for the day were also recorded to determine the food consumption. Likewise, adequate clean water was provided to the birds daily. Like the feeds, the volume of water offered to the birds was also recorded. The volume of water not consumed during the day was determined every morning of the following day.

To help maintain the good health of the birds, cleanliness of brooding and rearing cages was observed. Also, the chicks were vaccinated against new cattle's disease (NCD) on the twelfth day of brooding. In the no atovi premix treatment, novetracin was given to the birds through their drinking water. However, for the birds 5g of atovi premix/kg feeds, novetracin was offered for them.

The data were analyzed using the T-test where in control treatment zero (T_0) will be compared to treatment one (T_1)

Data Gathered

The data gathered were as follows:

1. Initial weight (kg). This was obtained by getting the weight of the birds at the start of the study or at day old.
2. Final weight (kg). This was obtained by weighing the birds at fifty five (55) days old or at the end of the study.



3. Water offered (ml). This refers to the amount of water offered to the birds daily.
4. Water left-over (ml). This was obtained by taking the amount of water not consumed by the birds. This was done every day, early in the morning and late in the evening.
5. Feed offered (kg). This was obtained by taking the weight of the feeds given to the birds each day.
6. Left-over feeds (kg). This was obtained by taking the weight of the feeds not consumed by the birds. This was done every morning before feeding time.
7. Morbidity. This refers to the number of birds that got sick during experimental period.
8. Mortality. This refers to the number of birds that had died during the study.
9. Cost of production. This refers to the cost of each of the items or materials purchased and used in the study.

From the data gathered above, the following were computed:

1. Total gain in weight (kg). This was obtained by subtracting the initial weight of the birds from their respective final weight.
2. Average daily gain in weight (kg). This was obtained by dividing the total gain in weight by the number of days of feeding the birds.
3. Total feed consumption (kg). This refers to the total amount of feed given to each experimental bird throughout the experiment.
4. Feed conversion ratio (FCR). This was obtained by dividing the total feed consumption by the total gain in weight.



5. Morbidity rate (%). This was obtained by dividing the number of birds that got sick by the total number of birds at the start of the study multiplied by 100 %.

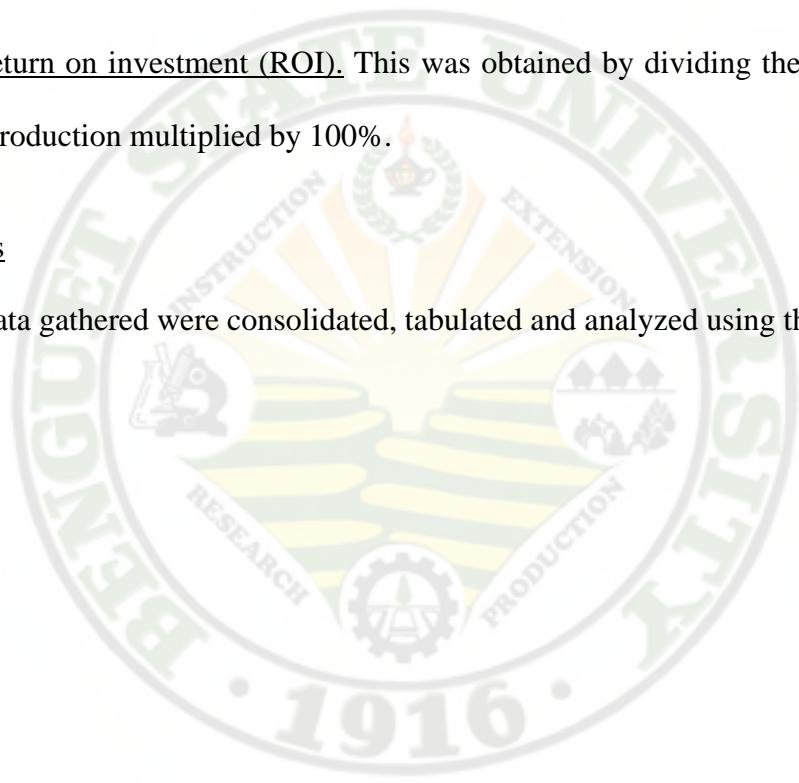
6. Mortality rate (%). This was obtained by dividing the number of birds that died during the study period by the total number of birds at the start of the study multiplied by 100%.

7. Net profit. This was obtained by deducting all the cost of production from the total sales.

8. Return on investment (ROI). This was obtained by dividing the net profit by the total cost of production multiplied by 100%.

Data Analysis

The data gathered were consolidated, tabulated and analyzed using the T-test.



RESULTS AND DISCUSSION

Body Weights

The body weights (initial and final) of the birds in the two treatments are shown in Table 1. In terms of the initial weight, statistical analysis revealed no significant difference between the two Treatment means. This shows that the experimental birds were more or less of the same weights at the start of the study. The overall mean initial weight of the experimental birds was 0.105 kg.

In terms of final weight, statistical analysis revealed that there was no significant difference between the two treatment means. This implies that the birds in the two treatments were more or less of the same weight at the end of the study. The overall mean final weight of the experimental birds was 1.369 kg. It is also implied that the addition of atovi feed premix into the diet at the level of 5g/kg feed did not affect the final weight of the birds.

Total Gain in Weight (TGW) and Average Daily Gain in Weight (ADG)

The total and average daily gains (ADG) in weight of the birds in the two treatments are shown in Table 2. Similar to the body weights, statistical analysis revealed no significant difference between the two treatment means in both the total gain in weight and average daily gain in weight of the birds. This implies that the inclusion of atovi premix into the feeds of the birds did not stimulate the growth rate nor cause any increase in the gains in weight of the birds. The birds had an overall mean of 1.264 kg and a mean average daily gain in weight of 0.0215 kg. This findings is different from the claim of the manufacturer, the Vim-Vertex and Company, Inc., that atovi, when given to the birds, improves their growth rate.



Table 3.Total feed consumption of the birds for 55 days

TREATMENT	FEED CONSUMPTION (kg)
No Atovi premix	3.112
w/ 5g Atovipremix/kg feeds	3.245

Table 4.Feed conversion ratio (FCR) of the birds in the two treatments

TREATMENT	MEAN
No Atovi premix	2.547
w/ 5g Atovipremix/kg feeds	2.495

Feed Conversion Ratio (FCR)

The mean feed conversion ratio per bird per treatment is shown in Table 4. Statistical analysis revealed that the FCRs of the birds in no atovi premix (T_0) and w/ 5g atovi premix/kg feeds (T_1) are not significantly different. This means that giving atovi feed premix to the birds did not affect their feed conversion ratio. The overall mean FCR was 2.521.

Mortality and Morbidity Rate

During the conduct of the study, there were no instances of mortality or morbidity among the birds. This indicates that the care and management particularly the health care, given to the birds was good and effective. The non-incidence of morbidity, particularly among the birds which were not given vetracin but instead given atovi premix into their



feeds, could possibly mean that the atovi premix was as effective as the vetracin in preventing the birds from being affected with a disease.

Return on Investment (ROI)

The returns on investment are presented in Table 5. And the itemized expenditures are presented in appendix Table 7. Although this parameter was not subjected to statistical analysis, the results showed that the Sunshine chickens supplemented with atovi feed premix had a slightly higher ROI of 3.61 % compared to the birds given no atovi feed premix which registered an ROI of 3.57 %.

The birds given atovi premix incurred a higher total cost of production of Php. 7,942.50 compared to Php. 7,420.36 incurred by the birds given atovi premix. However, the birds given atovi had slightly heavier final weights, hence, the higher sales compared to the birds given no atovi premix.

Table 5. Return on Investment (ROI)

TREATMENT	TOTAL SALES	NET INCOME	ROI
No Atovi premix	7,420.36	264.64	3.566
w/ 5g of Atovi per kg of feeds	7,942.50	293.50	3.610



SUMMARY, CONCLUSIONS AND RECCOMENDATION

Summary

The study was conducted to determine the effect of atovi feed premix on the growth performance of Sunshine Chicken at the BSU Poultry Experimental station, La Trinidad, Benguet. From May to June, 2011.

Eighty (80) day old chicks were used. They were randomly distributed into two (2) treatments. Each treatment was replicated four (4) times with ten (10) birds per replication, making a total of forty (4) birds per treatment. Data gathered were analyzed using the T-test.

Statistical analysis revealed no significant differences between the two treatment means in terms of initial weight, final weight, gains in weight (total and ADG) and the feed conversion ratio. The birds had an overall mean in initial weight of 0.105 kg. The mean final weights were 1.325 kg for the birds given no atovi premix and 1.413 kg for the birds given atovi premix. The mean total gain and ADG observed from the birds given no atovi was 1.222 kg and 0.021 kg, respectively. On the other hand, the mean total gain in weight and ADG observed from the birds given atovi premix at the level of 5 g/kg feed was 1.306 kg and 0.022 kg, respectively. In terms of feed conversion ratio no atovi premix is 2.547 while in w/ 5g of atovi per kg of feeds is 2.495. On the other hand, highly significant differences were observed in the feed consumption no atovi premix is 3.112 while in w/ 5g of atovi per kg of feeds is 3.245. The average daily gain has a grand mean of 0.022 kg and feed consumption ratio has a grand mean of 2.521.

On the return on investment, Sunshine chicken supplemented with atovi has a higher ROI of 3.610% and birds not supplemented with atovi have a lower ROI of 3.566%.



Conclusion

Based on the results of the study, it is therefore concluded that giving atovi feed premix to Sunshine chickens at the level of 5 g/kg feed did not improve their growth performance. It can also be concluded that the adding of atovi premix into the bird's diet at the level of 5 g/kg of feed can serve the purpose of vetracin, the one usually added into the drinking water of birds for health reasons.

Recommendation

Based on the findings, it is not recommended that the atovi premix may be given to the Sunshine birds at the level of 5 g/kg feed but this is because of its effect on disease prevention and not as growth stimulant. It is also recommended, however, that related studies should be conducted to determine the effect of adding atovi premix into the bird's diet on the carcass quality.



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APPENDICES

Appendix Table 1. Mean initial weight of the birds (kg)

TREATMENT	REPLICATION				TOTAL	MEAN
	I	II	III	IV		
T ₀	0.093	0.091	0.114	0.113	0.411	0.103
T ₁	0.095	0.094	0.139	0.099	0.427	0.107
GRAND TOTAL					0.838	
GRAND MEAN						0.105

T-TEST TABLE

Computed T	Tabular T	
	0.05	0.01
0.321	2.447	3.707



Appendix Table 2. Mean final weight of the birds in the two treatments (kg)

TREATMENT	REPLICATION				TOTAL	MEAN
	I	II	III	IV		
T ₀	1.35	1.29	1.365	1.295	5.30	1.325
T ₁	1.52	1.42	1.36	1.35	5.65	1.413
GRAND TOTAL					10.95	
GRAND MEAN						1.369

T-TEST TABLE

Computed T	Tabular T	
	0.05	0.01
2.015	2.447	3.707



Appendix Table 3. Mean total gain in weight in the two treatments (kg)

TREATMENT	REPLICATION				TOTAL	MEAN
	I	II	III	IV		
T ₀	1.257	1.199	1.251	1.182	4.889	1.222
T ₁	1.425	1.326	1.221	1.251	5.223	1.306
GRAND TOTAL					10.112	
GRAND MEAN						1.264

T-TEST TABLE

Computed T	Tabular T	
	0.05	0.01
1.698	2.447	3.707



Appendix Table 4. Average daily gain in weight (kg)

TREATMENT	REPLICATION				TOTAL	MEAN
	I	II	III	IV		
T ₀	0.021	0.020	0.021	0.020	0.082	0.021
T ₁	0.024	0.022	0.020	0.021	0.169	0.022
GRAND TOTAL					0.251	
GRAND MEAN						0.022

T-TEST TABLE

Computed T	Tabular T	
	0.05	0.01
1.387	2.447	3.707



Appendix Table 5. Mean total feed consumption per bird per treatment from day old to 55 days old (kg)

TREATMENT	REPLICATION				TOTAL	MEAN
	I	II	III	IV		
T ₀	3.147	3.047	3.138	3.115	12.447	3.112
T ₁	3.211	3.223	3.321	3.224	12.979	3.245
GRAND TOTAL					25.426	
GRAND MEAN						3.179

T-TEST TABLE

Computed T	Tabular T	
	0.05	0.01
3.895	2.447	3.707



Appendix Table 6. Mean feed conversion ratio (FCR) of the birds in the two treatments

TREATMENT	REPLICATION				TOTAL	MEAN
	I	II	III	IV		
T ₀	2.504	2.541	2.508	2.635	10.188	2.547
T ₁	2.253	2.431	2.720	2.577	9.981	2.495
GRAND TOTAL					20.169	
GRAND MEAN						2.521

T-TEST TABLE

Computed T	Tabular T	
	0.05	0.01
0.495	2.447	3.707



Appendix Table 7.Total cost of production by treatment

ITEMS	TREATMENT	
	T ₀	T ₁
A. Cost of Production		
1. Cost of stock	1,800.00	1,800.00
2. Feeds	4,032.86	4,204.55
3. Atovi	-	470.00
4. Vetracin	120.00	-
5. Material and Equipment	180.00	180.00
6. Disinfectant	50.00	50.00
7. Labor	1,237.50	1,237.50
Total	7,420.36	7,942.50
B. Total Gross Sales*	7,685.00	8,236.00
C. Net Income	264.64	293.50
D. Return on Investment (ROI) (%)	3.57	3.61

*It is assumed that birds were sold at Php. 140/kg live weight which was prevailing selling price during the conduct of the study.

