

## BIBLIOGRAPHY

TAYABAN, PETER B. JR. APRIL 2013. The Efficacy of Native Garlic as a Dewormer to Native Chicken. Benguet State University La, Trinidad, Benguet.

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## ABSTRACT

This study was conducted to find out the efficacy of native garlic juice as a dewormer to native chicken. Specifically, this study aimed to determine the species of parasites infesting the native chicken. Fecal analysis using the flotation method was used to determine the number of egg per gram of each species present in the experimental birds. Result of the fecal analysis revealed that there were five species of parasites infesting the experimental birds as follows: *Ascaridia galli* species, *Capillaria* species, *Heterakis gallinae* species, *Rillietina tetragona* species, and *Strongyloides avium* species.

Native garlic juice was administered as a dewormer to the experimental birds based on the following treatments: T<sub>0</sub>-commercial dewormer (control); T<sub>1</sub>-10ml garlic dewormer/ liter of water T<sub>2</sub>-15ml garlic dewormer/ liter of water; and T<sub>3</sub>-20ml garlic dewormer/ liter of water

Results of the study showed that 10 to 15ml garlic juice per liter of water could effectively eradicate the *Capillrai spp.*, *Ascaridia spp.* and *Heterakis spp.* After ten days of administration. The commercial dewormer was not able to eradicate the number of egg per gram of the *Hetarkis spp.* The egg count per gram of *Heterakis spp.* was reduced to 12.5% and then 16.67% at three and seven days after deworming, respectively.



## INTRODUCTION

Native chickens are still very common in the backyards of most rural people in the Philippines. The native chicken has evolved in a way that allows it to survive and reproduce in a marginal environment and with minimal management. More important, the meat of the native chicken has a unique flavor and texture which consumers prefer, the native chicken remains an important source of high-quality protein food and additional income for many rural dwellers. Concern over food safety and health issues has resulted in a shift in consumer preferences towards meat products with good flavor, from chickens raised in a more humane environment, with minimal antibiotics or chemical-based feed additives. Increasingly, and especially in urban areas, these poultry products are derived from intensive production, with control of parasitic infections through the use of veterinary medication and good sanitation. Backyard chicken production is constrained by many intrinsic losses have also been attributed to limited housing and veterinary care services. Furthermore, poor genetic potential due to lack of selection and predation are also potential threats to productivity. Chickens are a common choice for backyard-scale food production. Keeping a productive flock means taking care of your chickens' health. "Worms" can refer to a wide range of internal parasites in chickens, many of which can cause serious harm, loss of production and even death. Fortunately, farmers can use several natural methods to worm their chickens and several technologies have been tested and shown to improve the productivity of native chickens. However, most of these require financial and technical inputs that are beyond the capacity of farmers. Garlic serves as a treatment for flocks that have shown evidence of harboring internal parasites. Parasitism ranks high among factors that threaten village chicken production factors among which malnutrition, poor



management and the absence of biosecurity are outstanding and parasitism causes reduced growth, egg production, emaciation, and anemia as well as mortality. In addition, the roles of poultry worms such as *Heterakis galliae* has been associated with the transmission of *Histomonas melagridis* in turkeys and chicks. Moreover, parasitic infection or their concurrent infections result in immune suppression, especially in response to vaccines against some poultry diseases. Garlic contains vitamin A, B, and C. Its calcium, potassium, and iron, and the antioxidants, carotenes, germanium, and selenium plus the countless biologically active compound agents. But most important are garlic's 33 sumptuous compounds, especially the volatile amino acid allicin. Allicin is released when the cell walls of the garlic clove are crushed or pressed. Garlic helps reverse asthma and acne, treats ear drum disorders, and relieves bronchial congestion, gallbladder disorders, dyspepsia, and diarrhea and Garlic is a simple, nonprescription drug that helps detoxify the body and prevent disease. Garlic can cleanse the entire circulatory system in less than an hour. Garlic as an anthelmenthics which produce the desired effect and most significant of these compounds is allicin which is found in the garlic until it is crushed. Upon crushing this precursor of allicin, known as alliin, is enzymatically converted by allinaseallicin. The ability of crushed garlic containing large amount of allicin as an anthelmenthics is effective in reducing parasite egg. The uses of traditional medicinal plants in relieving symptoms of disease and curing various infections date back many centuries. In recent years, considerable interest has developed in Asian countries in the collection and extended use of indigenous and introduced plants, as well as garlic for medicinal purposes and scientific evaluation of plants which are traditionally used against digestive troubles and or helminthes. This study was undertaken to find out the effect of native garlic cloves as a



dewormer for native chickens. With this homemade dewormer, poultry raiser in the rural communities was able to control parasite infection in native chickens and will help produce healthy native chickens for family consumption and income. This

study aimed to determine the efficacy of garlic cloves as a dewormer to native chicken.

Specifically, it aimed to:

1. determine the best amount of extract garlic as dewormer ,
2. determine the percentage eggs of parasites eradicated after the first administration of garlic dewormer; and
3. compare the efficacy of garlic with the commercial dewormer

The study was conducted at Kennon, Tuba Benguet. The experimental used a total of 20 native chickens, which was subjected to seven days deworming.



## REVIEW OF LITERATURE

In 2012, Dawton found that chopped horse chestnut could be a very effective alternative to commercial dewormer for chicken. It is a safe and effective dewormer at 1ml per kilogram live weight of chicken.

The use of plant parts for medicines has long being in existence are widely documented in records kept in ancient China, India and Egypt. These ancient indigenous practices were discovered by a series of “trial and error” which then could not be substantiated by proven scientific theories. However, these practices have produced results of proven efficacies compared to conventional modern medicine. In recent times, herbal medicines have become indispensable and are forming an integral part of the primary health care system of many nations (Chopra *et al.*, 1956).

For centuries, medicinal plants have been used to combat parasitism, and in many parts of the world are still used for this purpose. In ethnoveterinary medicine, which draws inspiration from traditional practice, there seems to be a range of plant/s or plant extract suitable for treating almost every parasitic disease of livestock (International Institute of Rural Reconstruction (IIRR, 1994).

It has been found by Guarrera (1999), seeds of garlic, onion and mint have been used to treat animals that suffer from gastro-intestinal parasitism, whereas extracts of the tobacco plants have been used to treat the skin of livestock afflicted with external parasites. Leaves, dried flowers and oil from *Chenopodium ambrosioides*, a shrub that originated from Central America and has been distributed around the world, have all been used as anthelmintics since the early 1900s.



Garlic serves as a treatment for flocks that have show evidence of harboring internal parasites. Parasitism ranks high among factor that threaten village chicken production factors among which malnutrition, poor management and the absence of biosecurity are outstanding and parasitism causes reduced growth, egg production, emaciation, and anemia as well as mortality . In addition, the roles of poultry worms such as *Heterakis galliae* has been associated with the transmission of *histomonas melagridis* in turkeys and chicks (Obiora, 1992). Moreover, parasitic infection or their concurrent infections result in immuno suppression, especially in response to vaccines against some poultry diseases. Garlic contains vitamin A, B, and C. its calcium, potassium, iron, and the antioxidants, carotenes, germanium, and selenium plus the countless biologically active compound agents. But most important are garlic's sumptuous compounds, especially the volatile amino acid allicin (Calisir and Demir, 2005).

Allicin is released when the cell walls of the garlic cloves are crushed or pressed, garlic help reverse asthma and acne, treats ear drum disorders, and relieves bronchial congestion, gallbladder disorders, dyspepsia, and diarrhea. Garlic is simple, nonprescription drugs that helps detoxify the body and prevent disease. Garlic can cleanse the entire circulatory system in less than an hour. Garlic as an anthelmenthics which is produce the desired effect and the most significant of these compounds is allicin, known as aliin. The ability of crushed garlic containing large amount of allicin as an anthelmenthics is effective in reducing parasites egg. The uses of traditional medicinal plants in relieving symptoms o disease and curing various infections date back many



The emergence of resistance to anthelmintic drugs, which is now a worldwide phenomenon and the increased awareness of consumers about drug residues that potentially enter the food chain have stimulated investigation into alternatives to commercially available anthelmintics, such as medicinal plants. Their persistence in various environments and the wealth of information available from ethno veterinary sources in many parts of the world has resulted in medicinal plants attracting attention from the scientific community. In an attempt to utilize as effectively as possible the information available from ethno veterinary and medicinal reports on the anthelmintic activity of plants, there is a current trend to validate such plants under controlled experimental conditions. The variety of methodologies used for this purpose includes the provision of fresh, conserved or dried plants or plant parts to parasitized animals (Schillhorn, 1997).



## MATERIALS AND METHOD

### Materials

The materials to be used in this study are as follows: garlic cloves, commercial dewormer, cages, 8-9 mos. 20 native chickens (figure 1), Ziploc bags, ice box, weighing scale, electric compound microscope, glass slide, cover slip, record book, vials and Mc master counting chamber.



Figure 1. The experimental birds

### Methodology

Experimental design and treatment. Following the Completely Randomized Design (CRD), the 20 native chickens were divided into three treatments. Each treatment was replicated five times with one bird per replication making a total of five birds per treatment.



The different treatments were as follows:

T<sub>0</sub>- commercial dewormer

T<sub>1</sub>- 10ml garlic extract dewormer / liter of water

T<sub>2</sub>- 15ml garlic extract dewormer / liter of water

T<sub>3</sub>- 20ml garlic extract dewormer / liter of water

Preparation and administration of the garlic. The garlic was bought from the market, crushed and extracted by juicer and diluted per liter of water for deworming.

Procurement of experimental birds. The experimental birds were taken from Kennon, Tuba, Benguet. Twenty native chickens regardless of sex were used in the study for the administration of garlic as dewormer. The feces of the experimental birds was collected and placed in vials and examined at the Benguet State University College of Veterinary medicine for analysis prior to the conduct of the study to make sure that the birds have parasite. The experimental animal were given dewormer based from the treatment.

Collection of the fecal samples. There were three fecal collection periods for fecal analysis. The first fecal collection was done before the administration of the extract garlic or deworming. The succeeding fecal collection was done 3 days and 7 days continuous administration of dewormer. At least 10 grams of fresh fecal samples were collected.

Fecal analysis. Fecal analysis was performed at the BSU College of Veterinary Medicine, LaTrinidad, Benguet. The procedures were as follows:

Four grams of feces of the experimental animals was suspended in 20cc. of water. The suspension was mixed thoroughly with 36cc. of sugar solution and passed through a sieve. The mixture was further mixed in vortex mixer for 3.5 minutes. While stirring, 3-



5cc was pipetted off and allow to flow into the chambers of Mc Master Slide and let it stand for 15-20 minutes. The sample was examined under the microscope (LPO) and eggs were counted.

Fecal analysis was performed before deworming and at three and seven days of the administration of the dewormer.

### Data Gathered

The data gathered are as follows:

1. Species of parasites present in the feces of experimental animals based on egg morphology This was obtained through fecal analysis of the animal prior to the administration of the dewormer.
2. Egg per gram of feces This was taken by multiplying the reality of egg frequency count from the microscope multiplying by 200.
3. Number of egg per gram of feces This was taken before deworming and in three and seven days of the administration of the dewormer.



## RESULTS AND DISCUSSION

### General Observations

During the process of garlic cloves the chicken did not exhibit any salivation, and also did not vomit after swallowing the liquid mixture inspite of the severe bitter taste of garlic. However, the process was done in such as way that the solution was dilute with water as their drinking water to minimize the bitterness of the garlic juice. No mortality was observed during the test of animals.

### Species of Parasites and Egg Count from the Experimental Birds before Treatment

Before the administration of the garlic cloves dewormer, the feces of the experimental birds were subjected for fecal analysis for the identify the internal parasites present using the flotation method. There were five species of parasites identified in the experimental birds as follows: *Ascaridia galli* (Figure 2), *Capillaria* spp. (Figure 3), *Heterakis galliae* (Figure 4), *Rillietina tetragona*, and *Strongyloides avium* (Figure 5).

### Result of Fecal Analysis for *Ascaridia* spp. after the 3<sup>rd</sup> and 10<sup>th</sup> of Deworming

All experimental birds were infested with *Ascaridia galli* before the administration of the garlic dewormer.

Before deworming, the average number of eggs per gram of feces was 280 for the birds assigned in the control treatment. On the third day after the administration of commercial dewormer, the mean egg count was reduced to 80 and 10 days after the





2. *Acaridiagalli* spp. egg



Figure 3. *Capllia* spp. egg



Figure 4. *Heterakis galliae* spp. egg



Figure 5. *Strongyloides avium* spp. egg

administration, there were no more eggs found in the feces of birds indicating that the parasite was totally eradicated.

On the other hand, the birds given 10, 15 and 20 ml of garlic dewormer in drinking had initial egg counts of 0, 240, and 440, respectively for *Ascaridia galli*. On the third day of the administration of 10 ml garlic dewormer per l of water (T<sub>1</sub>), the egg count was reduced to 80. The same egg count was obtained in feces of birds on the 10<sup>th</sup> day of administering the garlic dewormer. On the other hand, in birds given 20ml garlic dewormer per l of water (T<sub>3</sub>), there was a drastic drop of egg count of *Ascaridia galli* from 440 to 80 on the third day of administration and on the 10<sup>th</sup> day, there were no more eggs of the parasite found in the feces of bird. This result showed that the 20 ml garlic dewormer per liter of water was very effective in eradicating *Ascaridia galli* as reflected by the remarkable reduction of eggs 10 days after continuous application.

Result of Fecal Analysis for  
*Capillaria* spp. on the 3<sup>rd</sup> and  
10<sup>th</sup> day of Dewormer Administration

Table 1 shows the mean number of eggs of *Capillaria spp.* per gram of feces during the administration of garlic dewormer. The experimental birds in all treatments were infested with the *Capillaria spp.* except for the birds given 15 ml garlic dewormer in of drinking water. The numbers of eggs per g of feces before the application of the dewormer in birds given the commercial dewormer, and those given 10, 15 and 20 ml garlic dewormer per liter of water were 240, 360, 0 and 240, respectively. After three days of continuous administration of 10ml garlic dewormer per liter of water, the egg count for *Capillaria spp.* was reduced to 80 eggs per g feces (22.22%) and after ten days of continuous administration, the egg count was further reduced to 40 egg per g feces (11.11%) of birds.



For birds given 20 ml garlic dewormer per liter of water, the egg count was reduced to 80 eggs per g of feces on the third day of administration and on the 10<sup>th</sup> day of administration, there were no more eggs of *Capillaria spp.* found in the feces of birds. This means that giving 20ml garlic dewormer per liter of water continuously for 10 days is effective in eradicating *Capillaria spp.* It is as effective as the commercial dewormer used as control. The only difference was that the commercial dewormer was given only once while the 20 ml garlic dewormer had to be included in drinking water for a period of 10 days to have the same effect as that of the commercial feed.

Result of Fecal Analysis For  
*Heterakis galliae* on the 3<sup>rd</sup> and  
10<sup>th</sup> Day of Dewormer Administration

Table 2 shows the mean number of eggs per gram feces of *Heterakis galliae* on the third and tenth day of dewormer administration. As reflected in the Table, all treatments were infested with the *Heterakis galliae*. In birds assigned to be given the commercial dewormer, the initial egg count for *Heterakis galliae* was 480 per g of feces. Three days after the dewormer was given to the birds, the egg count was reduced to 60 per g of feces but 10 days after the application, the egg count increased to 80 per g of feces. For birds given 10 ml garlic dewormer, the initial egg count prior to the administration of the dewormer was 440 eggs per g of feces. On the third day of administration, the egg count.



Table 1. Egg count of *Capillaria* spp. On the 3<sup>rd</sup> and 10<sup>th</sup> day of treatment

TREATMENT	BEFORE DEWORMING	DAYS OF ADMINISTRATION	
		3 DAYS	10 DAYS
Commercial dewormer	240	53	0
10ml garlic dewormer	360	80	40
15ml garlic dewormer	0	0	0
20ml garlic dewormer	240	80	0

was reduced to 80 per g of feces but on the 10<sup>th</sup> day of administration, the egg count was maintained at 80 per g of feces.

As to the birds given 15 ml garlic dewormer per liter of water, the initial egg count prior to administration was 400 per g of feces. This decreased to 200 on the 3<sup>rd</sup> day of 15 ml garlic dewormer administration and on the 10<sup>th</sup> day of administration, no more eggs were found in the feces of these birds. For birds given 20 ml garlic dewormer per liter of water, the initial egg count was 280. On the 3<sup>rd</sup> day of administration, the egg count was reduced to 120 and then later on the 10<sup>th</sup> day of administration, nor more eggs were found in the feces of birds.

From these results, it appears that continuous administration of 15 and 20 ml of garlic dewormer for 10 days is effective in eradicating *Heterakis galliae*.



Table 2. Egg count of *Heterakis galliae* ssp. On the 3<sup>rd</sup> and 10<sup>th</sup> of treatment

TREATMENT	BEFORE DEWORMING	<u>DAYS OF ADMINISTRATION</u>	
		3 DAYS	10 DAYS
To- commercial dewormer	480	60	80
T <sub>1</sub> - 10ml garlic	440	80	80
T <sub>2</sub> - 15ml garlic	440	200	0
T <sub>3</sub> - 20ml garlic	280	120	0

Result of Fecal Analysis for *Strongyloides avium* ssp. on the 3<sup>rd</sup> and 10<sup>th</sup> Day of Dewormer administration

In the experimental birds used in this study, only the birds assigned to the treatment of 10ml garlic per liter of water were infested with *Strongyloide savium*. The mean initial egg count was 200 per g of feces. On the third day of administering 10ml garlic dewormer to birds, egg count was reduced the egg count to 29 eggs per g of feces and on the 10<sup>th</sup> day of administration, no more eggs were found in the feces of birds. This means that continuous administration of 10ml garlic dewormer for 10 days can be effective eradicating *strongyloides avuim* birds.

Result of Fecal Analysis For *Rillietina Tetragona* ssp. on the 3<sup>rd</sup> and 10<sup>th</sup> Day of Dewormer administration

All experimental birds was not infested with *Rillietina Tetragona* only the birds treated with 10 ml per liter of water were infested. Before the administration of the garlic dewormer the total egg count was 800 and in three days of administering 10ml garlic dewormer a total count of 20 egg were seen and on the tenth day of administering garlic dewormer it was totally eradicated.





## SUMMARY, CONCLUSION AND RECOMMENDATION

### Summary

The study was conducted to determine the efficacy of garlic cloves as dewormer to native chicken. Specifically, it aimed to determine the efficacy of garlic in eradicating the species of parasites infesting native chickens.

Garlic cloves juice was administered as dewormer to the experimental birds based on the treatment where they were assigned. The treatments were:

T<sub>0</sub> - commercial dewormer (control)

T<sub>1</sub> - 10 ml garlic extract dewormer/ liter of water

T<sub>2</sub> - 15 ml garlic extract dewormer/ liter of water

T<sub>3</sub> - 20 ml garlic extract dewormer/ liter of water

Fecal analysis using the floatation method was used to determine the number of eggs per gram feces of each species present in the experimental birds.

Results of the fecal analysis reveal that there are five species of parasites infested to the experimental birds as follows: *Ascaridia galli*, *Capillaria spp*, *Heterakis gallinae*, *Rillietina tetragona*, and *Strongyloides avuim*.

Results of the study showed that the 15 to 20 ml garlic dewormer per liter of water could effectively eradicate the *Capillaria spp.*, *ascaridia galli spp.*, and *Heterakis gallinea spp.* when given to birds continuously for 10 days.



## Conclusion

From the findings of the study, it is concluded that garlic cloves at the dosage of 20ml per bird very is effective in expelling intestinal parasites particularly *Capillaria species*, *Ascaridia specie spp.* and *Heterakis galliae spp.*

## Recommendation

Based on the results of the study native garlic dewormer could be a very effective alternative to commercial dewormer for chicken.



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