

# OREGANO (*Origanum vulgare*) SYRUP FOR TREATING RESPIRATORY DISEASES IN BROILERS

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**Abstract** - The study was conducted to address the excessive use of antibiotics as a remedy to avert the negative effect of poultry diseases particularly the respiratory related disease of broilers (Chronic Respiratory Diseases, Infectious Bronchitis, Infectious Coryza and others) among farmers who raise broilers in their backyard for their consumption and additional source of income. It has been observed that due to irregular weather condition brought by climate change broilers are more vulnerable to respiratory diseases. In order to cure/treat and prevent broilers from diseases without excessively using antibiotics the use of (IMP) Indigenous Medicinal Plants particularly the oregano as an alternative medicine appears promising. This study aimed to determine the effect of oregano syrup compared to antibiotics, determine the best dosage of oregano syrup for the control of respiratory related diseases in broilers and to determine the length of effectivity of oregano syrup in controlling respiratory related diseases in broilers compared to antibiotics. A total of seventy-five (75) broilers per trial for the 1<sup>st</sup> to 3<sup>rd</sup> trials and sixty (60) broilers per trial for 4<sup>th</sup> and 5<sup>th</sup> trials were used in the study. The experimental birds were distributed into five (5) treatments for 1<sup>st</sup> to 3<sup>rd</sup> trials and two (2) treatments for 4<sup>th</sup> and 5<sup>th</sup> trials and replicated three (3) times having five (5) sample birds for 1<sup>st</sup> to 3<sup>rd</sup> trials and ten (10) sample birds per experimental cage for 4<sup>th</sup> to 5<sup>th</sup> trials. The treatments used were: T<sub>1</sub>- Antibiotics (Control) (follow the recommended dosage) ½ teaspoon/ 1 liter of water, T<sub>2</sub> - 10 ml Oregano Syrup per 1 Liter of Pure Drinking Water, T<sub>3</sub> - 20 ml Oregano Syrup per 1 Liter of Pure Drinking Water, T<sub>4</sub>- 30 ml Oregano Syrup per 1 Liter of Pure Drinking Water and T<sub>5</sub> - no Medication (Pure water). The parameters recorded are the count of broilers observed to be sneezing, coughing and having nasal discharge, rales, swollen head and tear eye on the ante mortem observations and the gross appearance of air sac and lungs on the post-mortem observations. The results showed that oregano syrup medication can treat respiratory ailment in broilers, both antibiotics and oregano syrup cured the morbid broilers for duration of 7 days of medication. The use of 10ml oregano syrup and antibiotics per 1 liter of drinking water is not significantly different from each other. Therefore, use of oregano syrup in treating respiratory related disease in broilers is recommended and similar study must be conducted to other animals.

**Keywords** - Broilers, Medicinal Plants, Oregano Syrup, Respiratory Disease

## INTRODUCTION

Poultry Production is one of the most important enterprises in animal industry. It has continuously provided the cheapest meat and egg-rich in protein for the consuming public. However, the industry is continuously facing with production problems particularly in the control of common respiratory diseases (*Chronic Respiratory Diseases, Infectious Bronchitis, Infectious Coryza and others*). With the climate change scenario, poultry will be more vulnerable to respiratory diseases. Once flocks are infected with respiratory disease and not given immediate attention it will lead to decreased production and consequent financial loss.

In such situation, antibiotic medication is the most common remedy to avert the negative effect of the diseases. However, the excessive use of antibiotics has an adverse effect to the health of both human and animals. Aside from being too costly, the abusive use of antibiotics has a negative impact to the ecosystem; this may lead to development of bacterial resistance to antibiotics. For these reasons, the use of locally available indigenous medicinal plants (IMP) for treating respiratory diseases in poultry and livestock appears to be promising.

Oregano (*Origanum vulgare*) has medicinal properties that can help in curing chicken diseases (B.

Inocencio, and A.P. Inocencio 2001). They further stated that oregano is good to treat colds and were found effective against respiratory diseases. The Oregano leaves contain phenols which were found effective against *E. coli*, *Salmonella*, *Clostridium*, *Staphylococcus*). The phenol content of oregano is high in antioxidant activity. The Agriculture Business Week (May 27, 2010) published that Dostofarm with the incorporation to Broadchem Corporation in the Philippines is using and manufacturing Dosto Green (7.5% oregano oil) -feed additive for poultry, calves, foals, goats, swine and rabbits. Dosto Liquid (100,000 mg/kg oregano oil) – water-soluble supplement for poultry and swine and for hatching eggs. Dosto Special 8% and Dosto Emulsion – control for *E. coli* and coccidiosis, improve gut microflora as well as the appetite and intake of poultry and livestock.

PVET (1998) stated that phenols have bactericidal and fungicidal component. Quisumbing (1978) reported that the juice from oregano leaves is effective against respiratory ailments like cough, asthma and bronchitis while Kirtikar, Basu and Loureiro (1978) reported that oregano infusion has a specific action for asthma, chronic coughs, and other convulsive infections.

This herbal formulation, if found effective, will be a great help for our farmers to use organically formulated medicine from indigenous medicinal plants (IMP) which are cheap, easy to prepare, effective and safe to use.

### OBJECTIVES OF THE STUDY

This research was conducted to determine the effect of oregano syrup in controlling respiratory diseases in broilers. Specifically, the study aimed to: determine the effect of oregano syrup as compared to antibiotics; determine the best dosage of oregano syrup for the control of respiratory related diseases in broilers; determine the length of effectivity of oregano syrup in controlling respiratory related diseases in broilers as compared to antibiotics;

### MATERIALS AND METHODS

#### The Experimental Design and Treatments

A total of seventy-five (75) broilers per trial for the 1<sup>st</sup> to 3<sup>rd</sup> trials and sixty (60) broilers per trial for 4<sup>th</sup> and 5<sup>th</sup> trials were used in the study. The experimental birds were distributed into five (5) treatments for 1<sup>st</sup> to 3<sup>rd</sup> trials and two (2) treatments for 4<sup>th</sup> and 5<sup>th</sup> trials and replicated three (3) times having five (5) sample birds

for 1<sup>st</sup> to 3<sup>rd</sup> trials and ten (10) sample birds per experimental cage for 4<sup>th</sup> to 5<sup>th</sup> trials. All observations on each parameter were subjected to statistical procedures using Analysis of Variance (ANOVA) for Randomized Completely Block Design (RCBD) and the T-Test to determine the differences between treatment means.

The following treatments used in the research were the following: T<sub>1</sub> - Antibiotics (Control) (follow the recommended dosage) ½ teaspoon / 1 liter of water; T<sub>2</sub> - 10 ml Oregano Syrup per 1 Liter of Pure Drinking Water; T<sub>3</sub> -20 ml Oregano Syrup per 1 Liter of Pure Drinking Water; T<sub>4</sub> - 30 ml Oregano Syrup per 1 Liter of Pure Drinking Water; T<sub>5</sub> - No Medication (Pure water)

#### Preparation of the Experimental Cages.

The cages were constructed using good lumber, bamboo and chicken wire. One week before the start of the study, the cages including the brooding house were cleaned, washed and disinfected as preventive measures against fatal poultry pest and diseases. The drinking and feeding troughs and other equipment needed were also disinfected.

#### Procurement of the Broiler Chicks.

The locally available broiler chicks were bought from a reliable dealer to ensure the health, vigor and livability of the chicks.

#### Brooding Period.

Upon arrival of the chicks, they were placed in the brooding house covered with properly spread rice hull, this serves as their beddings to maintain the proper amount of temperature at the brooding house during their brooding stage. A drinking trough containing fresh drinking water fortified with vitamins were given to them in order to rehydrate the broiler chicks after their stressful transport. After 10 minutes, chick booster feeds were given to them via the linear feeders for the broiler chicks to eat. Daily activities on brooding period were properly done for two weeks. After fourteen (14) days of brooding they were forced to induce respiratory ailments and once the symptoms of respiratory diseases were observed they were group and placed in their designated experimental cages.

#### Preparation of Oregano Syrup

The oregano leaves were collected washed and chopped using blender and extract manually. White sugar is dissolved to extracted oregano juice with a ratio of 1:1 (one cup of white sugar dissolve to one cup

of extracted oregano juice). The mixture is heated until it reached the 60°C using the thermometer to measure the heat, mixed thoroughly to become an oregano syrup. This was done so that the volatile phytochemicals present in the extracted juice of oregano would not be volatilized. Afterward, the oregano syrup were put into bottle and kept into refrigerator.

**Administration of Antibiotics and Oregano Syrup**

Oregano syrup was given to the sample birds in accordance to the amount of levels made per treatment. In *Treatment 1* sample birds were given 100 percent antibiotics which served as the control of the study. The recommended dosage of antibiotics was strictly followed (1/2 teaspoon per 1 liter of water). For *Treatment 2*, they were given 10ml of oregano syrup added to 1 liter of fresh water and administered to the sample birds. For *Treatments 3* they were given 20ml oregano syrup per 1 liter of drinking water and *Treatment 4* were given 30ml oregano syrup per 1 liter of drinking water respectively. *Treatment 5* no medication (pure water) was implemented.

**Feeding and drinking management**

The different treatments were fed with the same brands of commercial feeds (Broiler starter, grower, and finisher pellets) in ad libitum basis. Drinking water was made available to the experimental birds at all times. However, before the trial started, the experimental birds were allowed to drink cold water to induce respiratory ailments by giving them drinking water packed with ice until visual observation to the signs/symptoms of respiratory disease were observed. When all of the experimental birds showed signs of respiratory ailments, treatment was made using oregano syrup or antibiotic as specified in each treatment.

**RESULTS AND DISCUSSION**

Table 1 Length of Effectivity to Control Respiratory Disease

TRIAL S	TREATMENTS	Total Number Of Morbidities							
		Days							
		0	1	2	3	4	5	6	7
1 <sup>st</sup>	T <sub>1</sub> - Antibiotics	15	13	11	9	6	3	1	0
	T <sub>2</sub> - 10 ml OS/ 1 liter water	15	14	12	9	7	3	2	0
	T <sub>3</sub> - 20 ml OS/ 1 liter water	15	13	12	10	7	4	1	0
	T <sub>4</sub> - 30 ml OS/ 1 liter water	15	14	11	10	7	3	2	0
	T <sub>5</sub> - No medication	15	15	14	13	10	8	6	5
2 <sup>nd</sup>	T <sub>1</sub> - Antibiotics	15	14	12	8	5	3	1	0
	T <sub>2</sub> - 10 ml OS/ 1 liter water	15	13	12	9	5	4	1	0
	T <sub>3</sub> - 20 ml OS/ 1 liter water	15	13	12	8	6	4	2	0
	T <sub>4</sub> - 30 ml OS/ 1 liter water	15	14	12	9	6	3	2	0
	T <sub>5</sub> - No medication	15	15	14	14	12	8	7	5
3 <sup>rd</sup>	T <sub>1</sub> - Antibiotics	15	13	10	9	6	3	1	0
	T <sub>2</sub> - 10 ml OS/ 1 liter water	15	14	11	10	7	4	2	0
	T <sub>3</sub> - 20 ml OS/ 1 liter water	15	14	11	10	6	3	2	0
	T <sub>4</sub> - 30 ml OS/ 1 liter water	15	13	12	9	7	4	1	0
	T <sub>5</sub> - No medication	15	15	13	13	12	9	8	6
4 <sup>th</sup>	T <sub>1</sub> - Antibiotics	30	25	21	17	13	7	3	0
	T <sub>2</sub> - 10 ml OS/ 1 liter water	30	24	20	18	15	8	3	0
5 <sup>th</sup>	T <sub>1</sub> - Antibiotics	30	26	22	18	15	10	1	0
	T <sub>2</sub> - 10 ml OS/ 1 liter water	30	23	21	18	14	11	2	0

**Preparation of Oregano Syrup**

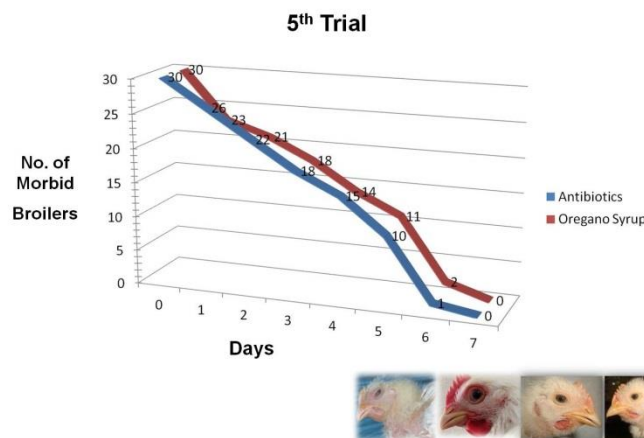
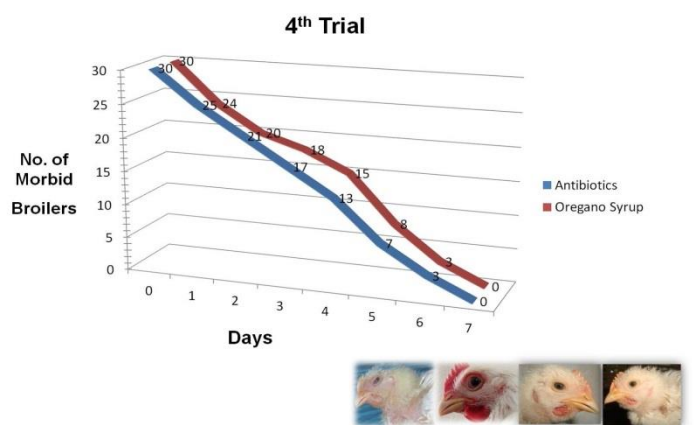
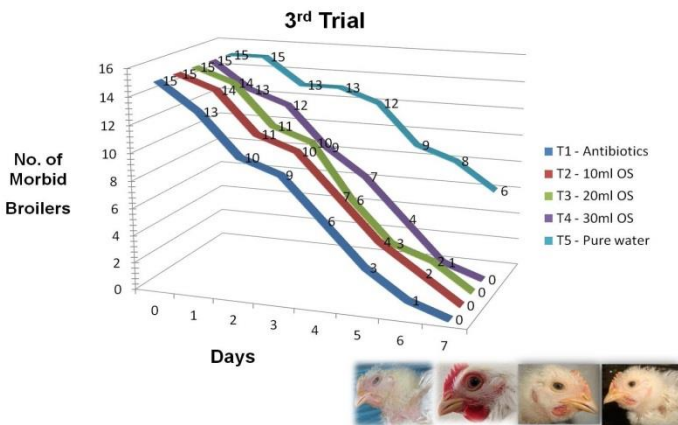
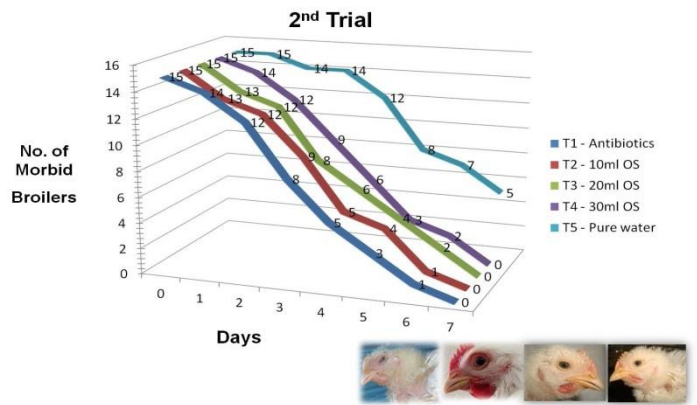
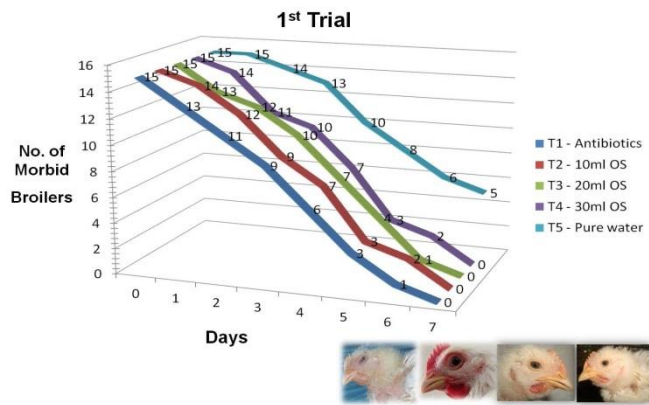


The length of effectivity of antibiotics and oregano syrup to control respiratory diseases revealed that both antibiotics and oregano syrup cured respiratory diseases in broilers. On day 0, before the medication of oregano syrup and antibiotics all sample broilers in all the treatments were infected with respiratory disease showing the sign and symptom of respiratory ailments. Treatment 1 to treatment 5 has 15 morbid broilers each on 1<sup>st</sup> to 3<sup>rd</sup> trials and treatment 1

and treatment 2 has 30 morbid broilers on 4<sup>th</sup> and 5<sup>th</sup> trials.

On the 1<sup>st</sup> day of medication of antibiotics and oregano syrup it revealed a significant decrease of morbid broilers, for the 1<sup>st</sup> trial T<sub>1</sub> and T<sub>3</sub> has 13 morbid broilers each, T<sub>2</sub> and T<sub>4</sub> has 14 morbid broilers each and T<sub>5</sub> remains uncured with 15 morbid broilers. On the 2<sup>nd</sup> trial T<sub>1</sub> and T<sub>4</sub> have 14 morbid broilers each,

T<sub>2</sub> and T<sub>3</sub> has 13 morbid broilers each and T<sub>5</sub> remains the uncured number of 15 morbid broilers. On 3<sup>rd</sup> trial T<sub>1</sub> and T<sub>4</sub> have 13 morbid broilers each, T<sub>2</sub> and T<sub>3</sub> has 14 morbid broilers each and T<sub>5</sub> remains the uncured number of 15 morbid broilers. On the 4<sup>th</sup> and 5<sup>th</sup> trials T<sub>1</sub> has 25 and 26 and T<sub>2</sub> has 24 and 23 morbid broilers respectively.





On the 2<sup>nd</sup> day of medication of antibiotics and oregano syrup it revealed again a significant decrease of morbid broilers, for the 1<sup>st</sup> trial T<sub>1</sub> and T<sub>4</sub> has 11 morbid broilers each, T<sub>2</sub> and T<sub>3</sub> has 12 morbid broilers each and T<sub>5</sub> has 14 morbid broilers. For the 2<sup>nd</sup> trial there were 12 morbid broilers each for T<sub>1</sub> to T<sub>4</sub> and T<sub>5</sub> has 14 morbid broilers. On the 3<sup>rd</sup> trial, 10 morbid broilers for T<sub>1</sub>, 11 morbid broilers each for T<sub>2</sub> and T<sub>3</sub>, 12 morbid broilers for T<sub>4</sub> and 13 for T<sub>5</sub>. On the 4<sup>th</sup> and 5<sup>th</sup> trials T<sub>1</sub> has 21 and 22 and T<sub>2</sub> has 20 and 21 morbid broilers respectively.

On the 3<sup>rd</sup> day of medication of antibiotics and oregano syrup it revealed a significant decrease of morbid broilers, on the 1<sup>st</sup> trial T<sub>1</sub> and T<sub>2</sub> has 9 morbid broilers each, T<sub>3</sub> and T<sub>4</sub> has 10 morbid broilers each and T<sub>5</sub> has 13 morbid broilers. For the 2<sup>nd</sup> trial there were 8 morbid broilers each for T<sub>1</sub> to T<sub>3</sub> in T<sub>2</sub> and T<sub>4</sub> has 9 morbid broilers each and T<sub>5</sub> has 14 morbid broilers. On the 3<sup>rd</sup> trial, 9 morbid broilers each for T<sub>1</sub> and T<sub>4</sub>, there were 10 morbid broilers each for T<sub>2</sub> and T<sub>3</sub>, and 13 morbid broilers for T<sub>5</sub>. On the 4<sup>th</sup> and 5<sup>th</sup> trials T<sub>1</sub> has 17 and 18 and T<sub>2</sub> has 18 morbid broilers respectively.

On the 4<sup>th</sup> day of antibiotics and oregano syrup medication it revealed a significant decrease of morbid broilers, on the 1<sup>st</sup> trial T<sub>1</sub> has 6 morbid broilers, T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> has 7 morbid broilers each and T<sub>5</sub> has 10 morbid broilers. For the 2<sup>nd</sup> trial there were 5 morbid broilers each for T<sub>1</sub> and T<sub>2</sub>, in T<sub>3</sub> and T<sub>4</sub> has 6 morbid broilers each and T<sub>5</sub> has 12 morbid broilers. On the 3<sup>rd</sup> trial, 6 morbid broilers each for T<sub>1</sub> and T<sub>3</sub>, there were 7 morbid broilers each for T<sub>2</sub> and T<sub>4</sub>, and 12 morbid broilers for T<sub>5</sub>. On the 4<sup>th</sup> and 5<sup>th</sup> trials T<sub>1</sub> has 13 and 15 and T<sub>2</sub> has 15 and 14 morbid broilers respectively.

On the 5<sup>th</sup> day of antibiotics and oregano syrup medication it revealed a significant decrease of morbid broilers, on the 1<sup>st</sup> trial T<sub>1</sub>, T<sub>2</sub> and T<sub>4</sub> has 3 morbid broilers each, T<sub>3</sub> has 4 morbid broilers and T<sub>5</sub> has 8 morbid broilers. For the 2<sup>nd</sup> trial there were also 3 morbid broilers each for T<sub>1</sub> and T<sub>4</sub>, in T<sub>2</sub> and T<sub>3</sub> has 4 morbid broilers each and T<sub>5</sub> has 8 morbid broilers. On the 3<sup>rd</sup> trial, 3 morbid broilers each for T<sub>1</sub> and T<sub>3</sub>, there were 4 morbid broilers each for T<sub>2</sub> and T<sub>4</sub>, and 9

morbid broilers for T<sub>5</sub>. On the 4<sup>th</sup> and 5<sup>th</sup> trials T<sub>1</sub> has 7 and 10 and T<sub>2</sub> has 8 and 11 morbid broilers respectively.

On the 6<sup>th</sup> day of antibiotics and oregano syrup medication it revealed a significant decrease of morbid broilers, on the 1<sup>st</sup> trial T<sub>1</sub> and T<sub>3</sub> has 1 morbid broiler each, T<sub>2</sub> and T<sub>4</sub> has 2 morbid broilers and T<sub>5</sub> has 6 morbid broilers. For the 2<sup>nd</sup> trial there were also 1 morbid broiler each for T<sub>1</sub> and T<sub>2</sub>, in T<sub>3</sub> and T<sub>4</sub> has 2 morbid broilers each and T<sub>5</sub> has 7 morbid broilers. On the 3<sup>rd</sup> trial, 1 morbid broiler each for T<sub>1</sub> and T<sub>4</sub>, there were 2 morbid broilers each for T<sub>2</sub> and T<sub>3</sub>, and 8 morbid broilers for T<sub>5</sub>. On the 4<sup>th</sup> and 5<sup>th</sup> trials T<sub>1</sub> has 3 and 1 and T<sub>2</sub> has 3 and 2 morbid broilers respectively.

On the 7<sup>th</sup> day of antibiotics and oregano syrup medication all of the treatments except for treatment 5 became normal and remains healthy up to marketable age of the broilers. The findings of the study highlight the promising role of oregano oils, the carvacrol and thymol content has an antibacterial agents. Data in the literature on the availability and pharmacokinetics of carvacrol and thymol (Bhattaram et al., 2002; De Vincenzi et al., 2004), and on acute and short-term in vivo effects, suggest that they may not pose a risk for human and animal health (Chami et al., 2005; Stamatii et al., 1999).

**Post Mortem Observations (Gross appearance of air sacs and lungs)**

**TABLE 2 GROSS APPEARANCE OF AIR SACS AND LUNGS OF OBSERVED BROILER CHICKEN**

TREATMENTS	OBSERVABLE CONDITION		
	SIGNS / SYMPTOMS EXHIBITED		
	CLEAR	SLIGHTLY CLOUDY	CLOUDY
T <sub>1</sub> -Antibiotics	5	1	0
T <sub>2</sub> -10ml OS/1 liter water	5	1	0

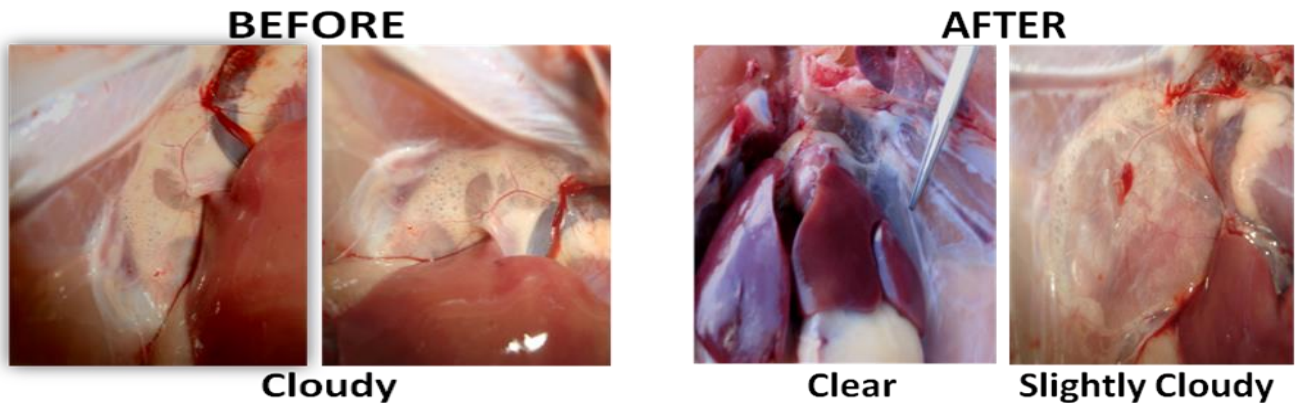


Figure 3 GROSS APPEARANCE OF AIR SACS AND LUNGS OF OBSERVED BROILER CHICKEN

The gross appearance of air sac and lungs of the experimental broilers infected with respiratory disease and those that are apparently normal on the post-mortem observations of the study. Six sample birds for antibiotics and oregano syrup treatment were dissected at the end of the study to observed gross appearance of air sac and lungs. Both antibiotics and oregano syrup treatment revealed that of the 6 sample birds dissected 5 of them were normal (clear) appearance of air sac and lungs and only 1 sample bird shows slightly cloudy. The results revealed that essential oils, thymol and carvacrol showed strong activities against *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* (Gholam et al., 2007). The presence of these microorganisms in the mucous was removed after the medication of oregano syrup.

#### CONCLUSION AND RECOMMENDATION

Based on the results and findings of the study, it is concluded that: Oregano syrup can treat respiratory diseases in broilers; No significant differences among the oregano syrup treatments; The effect of antibiotics and oregano syrup in controlling respiratory related disease in broilers remains the same; Broilers gave only a pure drinking water recovers slowly than those medicated with antibiotics and oregano syrup.

Based on these it can be concluded that Use 10ml of oregano syrup for controlling respiratory related disease in broilers as alternative of using antibiotics.

Similar study must also be conducted to other animals.

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