TEST FLOUR ANT NESTS INHIBITION *(Myrmecodia pendans)* AGAINST BACTERIA *Escherichia coli* and *Salmonella* IN INTESTINAL OF QUAIL *(Coturnix-coturnix japonica)*

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ABSTRACT

This research aims to know the influence of addition (Myrmecodia pendans) to drag the power of quail bacteria. The sample in this method is the quail as much as 250 quil. Basal mixture of yellow corn, soybeans for cake, fish meal, pollard, dicalsiumposfhat, premix, cooking oil, and Dekstro lekso methionine. The addition of Ant consists of 5 treatments, only control or P0 (0%), P1 (0.2%), P2 (0.4%), P3 (0, 6%), as well as the addition of P4 (0, 8%). The observed inhibitory power is bacterial parameters (Escherichia coli Salmonell B bacteria) and Total Plate Count (TPC). The research was designed for Random Design complete with 5 treatments and five replicates. The results of the analysis Showed that the granting of Ant against test bacteria inhibitory power suggests that the addition of the Ant's nest s Significantly different (P <0, 05) for the bacteria Escherichia coli with an average power of drag is highest on the treatment of P4 (0.8%) of 13, 05 mm, whereas the drag power test Salmonella bacteria on average the highest inhibit ory at the treatment power P2 (0, 2%) of 12, 21 mm. The number of antihypertensive bacteria found in the gut quail, but statistically not different either in the bacteria Escherichia coli Salmonella (P> 0, 05). The result of the study was that the higher the branch of Ant can maintain intestinal bacteria on growth performance of quail.

Keywords: Myrmecodia pendans, quail, drag power bacteria, TPC

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INTRODUCTION

Livestock currently shows a very rapid development, as is the case with poultry farms, one of which is quail. Quail population (*Coturnix coturnix japonica)* or *Japanese quail* in Indonesia has increased. Problems that hinder growth in quails today are diseases caused by bacteria or viruses that inhibit the growth of quails. Bacteria that often interfere with digestion of quails, namely the bacteria *Escherichia coli* and *Salmonella*

Infection is the main cause of disease in the world especially in tropical regions such as Indonesia due to tropical temperatures, and high humidity so that microbes can thrive Infection can be caused by various microorganisms such as viruses, bacteria, fungi, rickets, protozoa, and bacteria (Ramadani *et al. ,* 2013) .

Escherichia coli is a bacteria that is always present in the digestive system of humans and animals has been generally regarded as an indicator of dirt contamination. Nugroho and Wibowo (2005) stated that *Escherichia coli* in chickens is commonly known as normal bacteria in the digestive tract. Whereas *Salmonella* ter *typhimurium* bacteria entered the family *Enterobactericeae,* a rod-shaped gram-negative bacteria and not berspora, this bacterium is able to grow on the aerobic and anaerobic conditions and can cause *gastrointestinal* symptoms (disorders of the stomach) also cause typhoid fever (S.typhimurium) (Sugiastuti 2002)

According to Jamin (2015) , that the number of *E. coli bacteria* in the increased digestive tract or outside the intestine will cause diarrhea. This is due to the fact that the maintenance of poultry by the community is generally carried out without health management and feed, therefore the potential for poultry to be infected is very large, such as diarrhea.

The growth of bacteria that attack the quail's intestines causes harm to farmers. To overcome the bacterial inhibition of quail intestines, infection can be treated with natural antibiotics. Various alternatives began to be developed to look for natural plants which are processed into natural antibiotics of herbal plants including local medicinal plants. Ant nests are medicinal plants which have a fla content of noid vo , tannin, tocopherol (vitamin E) and there are minerals (Subroto, 2006).

Tanin is an anti-diarrhea effect that can function as a protein freeze or astringent, a substance that binds to the mucosa , skin and tissues that can form proteins. The mucous membrane forming a barrier *(thight junction*) is resistant to inflammation from microorganisms. Tanin can inhibit chloride through a bond between tannate proteins in the intestine and tannins. Flavonoids also have the effect of anti-diarrhea by blocking receptors in the intestine so reducing secretion to the intestinal lumen can reduce fluid secretion to the intestinal lumen (Clinton, 2009). Ahmadu (2007) states that flavonoids can also inhibit histamine release and inflammatory mediators that can increase intestinal peristalsis, and can inhibit intestinal peristalsis induced by spasmogens.

According to Rostina (2009), in general, infectious disease can be cured using antibiotics . The use of antibiotics for al lok infection has been reduced because of the tendency to induce local hypersensitivity to the skin or mucous membranes . Increased use of antibiotics, spurred increased bacterial resistance to these antibiotics.

Utilization of natural substances as medicines tradi sional in Indonesia lately m eningkat, even some early sump nature has produced large-scale manufacturing. The use of traditional medicines is considered to have smaller side effects compared to drugs derived from chemicals, besides the price is more affordable. Besides profit Another use of traditional medicine is that the raw material is easily obtained and the price is relatively cheap (Putri, 2010). One of the medicinal plants that is very useful to maintain treating health problems is the ant nest, a natural medicine from Papua from Wamena. Empirically, these ant nest plants can cure various serious diseases

such as tumors, cancer, heart, hemorrhoids, tuberculosis, rheumatism, gout disorders, strokes, ulcers, impaired kidney function, and prostate (Ramadani *et al* ., 2013).

Another function of active substances in ant nests as antibiotics, antimicrobial and immuno stimulants to increase immunity. Technically, immuno stimulants will help and protect body cells to carry out their functions. This research aims to; (1) knowing the inhibitory test of ant nests, (2) the effect of providing ant nest to bacterial *Total Plate Count* (TPC) *Escherichia coli* and *Salmonella* in digesta quail intestines.

MATERIALS AND METHODS

This study used quail *(Coturnix-coturnix japonica)* strain Autum (crossing quail *japonica* with quail *pexigun*) aged one day *Day Old Quail* (DOQ) quail quail with a population of 25 0 tails. Quail is maintained starting from DOQ using finished feed. The research treatment began at the age of 28 days with basal feed and ant nest plants that have been made into flour with the level of the ant nest flour at a predetermined level.

Feed used as a control feed is food prepared without the use of antibiotics. The feed ingredients used to make quail rations consist of yellow corn, soybean meal, MBM (*meat bone meal*) fish meal, *pollard, dicalsiumposfhat,* premix, gore ng oil, and *Dekstro Lekso* feed *methionine* made by 10 0 kg with the need for any feed ingredients. The treatment is as follows: P0 100% Basal feed without ant nest flour **,** P1 Basal feed + Ant nest flour 0.2%, Basal Feed P2 + Ant nest flour 0.4% **,** P3 Feed b origin + Ant nest flour 0.6 , P4 Basal Feed + Ant nest flour 0.8% . The addition of ant nest flour is given to feed, without changing the feed needs of quails. Observation variables of bacterial inhibitory tests on ant nest plants which have been treated with flour and *Total Plate Count* (TPC) in digesta quail intestine. The results of the study were carried out statistical analysis using a completely randomized method (CRD) with 5 treatments which were treated 5 times with each treatment using 10 quail laying birds. The difference in the effect that is very real is followed by the Ducan Multiple Distance Test (UJBD).

RESULTS AND DISCUSSION

Effect of the addition of ant nests on bacterial inhibition

The results of the study in Table 1, show that the administration of ant nests can inhibit bacterial growth in the intestines of quails.

Table 1. Average bacterial inhibition (*Escherichia coli Salmonella)* in quail intestine

Variabel		P0	P1	P2	P3	P4
In vitro (mm)	*Escherichiacoli*	$0,5\pm0,00^{c}$	$9,55\pm0,71^{bc}$	$4,775\pm1,03^{ab}$	$9\pm4,95^{ab}$	$11,55\pm2,12^{a}$
	Salmonella	$0,5\pm0,00^{d}$	$12,63\pm0,59^{a}$	$4,78\pm1,03^{c}$	$6,55\pm0,71^{b}$	$7,275\pm0,32^{b}$
In vivo (cfu/ml)	*Escherichiacoli*	$1,01\times 10^{6}\pm 5,57\times 10^{5}$	$6,20\times 10^{5}\pm 5,35\times 10^{5}$	$4,78\times 10^{5}\pm 4,68\times 10^{5}$	$3,36\times 10^{5}\pm 4,07\times 10^{5}$	$3,10\times 10^{5}\pm 4,70\times 10^{5}$
	Salmonella	$1,34\times 10^{6}\pm 1,24\times 10^{6}$	$1,02\times 10^{6}\pm 1,24\times 10^{6}$	$9,33\times 10^{5}\pm 9,34\times 10^{5}$	$5,13\times 10^{5}\pm 5,49\times 10^{5}$	$2,03\times 10^{5}\pm 2,75\times 10^{5}$

Description: $^{a, b}$ superscript is different in the same column showing very significant differences ($P < 0.05$)

Based T Table 1. The average diameter of inhibition zone respectively P4 treatment (basal feed + Flour anthill 0.8%) is 11, 55 mm, treatment P3 (Basal feed + Ant nest flour 0.6%) is 9 mm, treatment P2 (Basal feed + Ant nest flour 0.4%) is 4.75 mm and treatment P1 (Basal feed + Ant nest flour 0.2%) is 9.55 mm , while in treatment P0 which is not given the concentration of ant nest is 0.5 mm against the *Escherichia coli bacteria* .

From the table above, it can be seen that statistically between the treatment variables did not have a significant effect, but the data from this study showed that the increase in ant nest was 0.8% (P4 basal feed + Ant nest flour). 0.8%) in the ration showed a higher bacterial inhibition compared to without the addition of an ant nest (P0).

For the inhibitory power in *Salmonella* bacteria shows that the bacterial inhibitory zone will increase if the concentration of the ant nest is added. The average diameter of the inhibitory zone in each treatment P4 (Basal Feed + Ant nest flour 0.8%) is 7, 27 mm; treatment P3 (Basal feed + Ant nest flour) 0.6%) is 6.55 mm ; , treatment P2 (Basal feed + Ant nest flour 0.4%) is 4, 78 mm and treatment P1 (Basal feed + Ant nest flour 0.2 %) is 12, 63 mm, whereas in treatment P0 which is not given the concentration of an ant nest is 0.5 mm against *Salmonella* bacteria .

The results of the variance analysis showed that the more concentrated ant nests would increase the bacterial inhibition zone against Escherichia coli bacteria and *Salmonella* bacteria ($P < 0.05$). Further acyl H Duncan test showed that there are differences in the provision of advice g ant concentration on P4 concentration (basal feed + Flour anthill 0.8%) with P0 (0%) against the inhibition zone of *Escherichia coli bacteria;* giving concentration of ant nests to kose ntrasi P4 (Basal feed + Ant nest flour 0.8%) has the same effect as giving an ant nest with a concentration of P3 (Basal feed + Ant nest flour 0.6%) and P2 (Basal feed + Ant nest flour 0.4%) against the inhibition zone of *Escherichia coli bacteria.* The highest average inhibition zone of bacteria is given by giving ant nests with concentrations of P4 (Basal Feed + Ants flour 0.8%), which is equal to 11.55 mm while the smallest bacterial inhibition zone is found in k ontrol P0 (0%) without giving anthill concentrations of 0, 5 mm.

The higher the concentration of giving ant nests given, the more inhibitory or *clearing zones* that are formed, this is because the ant nest contains flavonoids. The results of this study are in line with Rahman (2008) , which states that plants containing flavonoids are widely used in traditional medicine. Flavonoids are antimicrobial compounds due to their ability to form complexes with dissolved extracellular proteins and microbial cell walls. Lipophilic flavonoids will damage microbial membranes.

According to Boshra *et. a l.* (2013) that e nzim papain ga ju role in inhibits bacterial growth because on papain contained 11.6% *potassium benzyl glucosinolate* which can reduce blood sugar at once accelerate wound healing. Papain has activities antibacterial that me nghambat growth of gram-positive organisms and g ram negative. Papain shows significant antibacterial activity against bacteria g positive ram and negative g ram (S. aureus, E. coli, B. cereus, P. aeruginosa and S. flexneri)

Duncan's further test results given the concentration of ant nests on *Salmonella* bacteria showed that there was a difference in the concentration of ant nests on the concentration of P4 (Basal Feed + Ant nest flour 0.8%) with P2 (Basal Feed + Ant nest flour) 0.4%) , P3 (Basal feed + Ant nest flour 0.6%) and P0 (0% control) against the inhibition zone of *Salmonella* bacteria *;* giving concentration of ant nests to the concentration of P4 (Basal feed + Ant nest flour 0.8%) has the same effect as giving an ant nest with a concentration of P3 (Basal feed + Ant nest flour 0.6%) against the inhibition zone of *Salmonella* bacteria . The highest bacterial inhibition zone is

found in giving ant nests with concentration P1 (Basal feed + Ant nest flour 0.2%), sure i amounting to 12.63 mm while the smallest bacterial inhibition zone is found in control of P0 (control 0%) without giving concentration of ant nest of 0.5 mm

Taryati Research (2010), about the ham bat power tests of bacteria by using e KST rack m inum ciplukan in water showed no effect on the inhibition of Salmonella bacteria on quail. Extracts containing f c i plukan lavonoid, where f lavonoid can m enghambat bacterial growth inhibition of the growth of *Staphylococcus aureus* and Salmonella typhimurium. The effects of flavonoids on organisms are so numerous that many people use plants that contain flavonoids in traditional medicine (Middleton and Kandaswani, 2006). Flavonoids act as a good reservoir of hydroxy radicals and superhydroxy so they can protect membrane lipids from damaging reactions. Antioxidant activity is a component f activism plants that can be used traditionally to treat liver disorders Fungs i i. So that there is no internal organ disruption at the end of the study on the quail.

Based on the results of research kan Bio-tech Center LIPI (2014), proved that s charcoal s ants are p apua contain active compounds which are known in the medical world for treatment of various diseases. In addition to tif ak compound was, in the hive APU s a p ants are also found other useful content, such as tocopherol, magnesium, calcium, iron, phosphorus, sodium, and zinc. Here is a brief battle of some active compounds that are useful in the ant nest .

The results of the Mardany (2016) study, showed that the phytochemical screening test showed that simplicia powder and extract of ant nest (M. beccarii) m engandung flavonoids and tannins known to function in part Tiioxidants, so it is very good for preventing cancer. According to (Middleton, 2000), the effects of consumption of flavonoids include anti-inflammatory, anti-allergic, antimicrobial, hepatoproteic , antiviral, antithrombotic, cardioprotective, capillary strengthening, antidiabetic, anti-cancer and antineoplastic effects, and others.

The results of this study indicate that there is little difference from the study (Frengki *et al.,* 2014) on the active compounds of secondary metabolites of Acehnese l lent (Myrmecodia sp.) Which successfully identified the presence of triterpenoid and steroid active compounds . In ant nests from Merauke district (M. beccarii) no triterpenoid or steroid group compounds were identified. Ant nests provide optimal extraction of active substances when they are 4 years old

The effect of giving ant nests to *Total Plate Count* (TPC) of *Escherichia coli* and *Salmonella bacteria* in digesta of quail intestines.

TPC (*Total plate count)* is one method that can be used to calculate the number of microbes in feed ingredients, TPC analysis is the calculation of the number of bacteria in the sample (digestion of the small intestine) the analysis phase consists of three: media making, dilution, and management .

Ha s il analysis is the method of giving an ant nest to TPC (*Total plate count*) Escherichia coli in digesta of quail intestine was not significantly different (P> 0.05). Verage TPC *(total plate count)* calculation of the provision of flour anthill on paka n basal quail each treatment ranging from the average of bacterial lowest to highest, P4 (0.8% flour anthill) with jum lah bacteria (3.10×10^5 cfu / ml); P3 (0.6% ant nest flour) with a bacterial average (3.36×10^5 cfu / ml); P2 (0.4% ant nest flour) with a bacterial average (4.78×10^5 cfu / ml); P1 (0 , 2% ant nest flour) with an average bacteria (6.20×10^5 cfu / ml); P0 (0% ant nest flour) with the amount of bacteria (1.01×10^6 cfu / ml). The higher the addition of ant nests, it inhibits bacteria, which is the decrease in the number of bacterial colonies.

Tejakusuma (2015) shows the test of the effect of the level of concentration of the use of carrageenan on the beginning of decay of quail nuggets at room temperature shows that the higher feed on quail nuggets results in a decrease in total bacteria.

Frazier and Westhoff (2004), who stated that bacterial growth can be influenced by antimicrobial concentrations in food, as evidenced by the continued decline in the number of bacteria with the addition of P4 ant nests (0, 8% ant nest flour).

According to Wibawan *et . al* . (2010) said that poultry disease caused by *E. coli* bacteria is colibasilosis. Tabbu (2000) states that colibasilosis can be found in various forms. Chickens attacked by colibacillosis generally show clinical signs such as thin, dull hair, decreased appetite, and stress.

Results analsiis njukkan menu variety that the increasing concentration of anthill then inhibition *of salmonella* bacteria in a little bush but statistically based on variance analysis was not significantly different from TPC (P> 0, 05). The average TPC (*Total plate count*) of *salmonella* bacteria in digesta quail laying intestines of the average number of bacteria ranging from the lowest to the highest in each treatment; P4 (0.8% ant nest flour) with a bacterial average (2.03×10^5 cfu / ml); P3 (0.6% ant nest flour) with a bacterial average (5.13×10^5 cfu / ml); P2 (0.4% ant nest flour) with a bacterial average (9.33×10^5 cfu / ml); P1 (0.2% ant nest flour) with an average bacteria (1.02×10^6 cfu / ml); P0 (0% of the size of the ant nest) with the average bacteria (1.34×10^6 cfu / ml).

Penamb a false nest t han concentration can inhibit the inhibition of *salmonella* thus the fewer number of bacterial colonies. The results of this study are in line with the research (Ramadani *et al* . , 2013) said that e ethanol extract of ant nests has a wider inhibition zone compared to decoction and the higher the concentration of extract the wider the inhibition zone formed. H al in i caused by the test results phytochemical ant nest contains nutrients essential for the body, plants, ant nest ga ju contains chemical compounds of the flavonoid and tannin. In many cases, flavonoids can act directly as antibiotics by interfering with the function of bacterial or viral microorganisms (Subroto and Saputro, 2006). Flavonoids also act as antioxidants that can form cell defense mechanisms against free radical damage (Manna *et al.,* 2009) .

The results of the study according to Das *et.al* (2016), that *Salmonella* bacteria often found in food ingredients from animals, especially chicken meat, which have not yet been cooked or are half cooked and spread to other foods through cross contamination .

According to Tabbu (2000) transmission usually occurs orally through feed, drinking water, dust or dirt contaminated by *E. coli.* Dust in the chicken coop can contain 10^5 -10^6 Cfu / g and this bacteria can last long, especially in dry conditions. Diseases in poultry have economic significance for the industry per month because it can cause disruption of growth, decrease in production, decrease in carcass and egg quality, and quality of chicks. In addition, the presence of *E. coli* infection is a supporting factor for the emergence of complex diseases of the respiratory, digestive or reproductive tract that are difficult to overcome.

CONCLUSION

Based on the results of the addition test of giving the concentration of ant nest flour to the bacterial inhibitory power *in vitro* showed that the higher the addition of ant nest, the higher the inhibitory capacity of bacteria in the *Escherichia coli* and *Salmonella bacteria* while the u ji *in vivo* showed that the higher the granting anthill then inhibit bacteria that reduction in the number of bacterial colonies yan g namu tistik sta n is not significantly different (P> 0,

05). has an effect on the inhibition of *Escherichia coli* and *Salmonella bacteria* in digesta quail intestine.

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