

## A Cross Sectional Survey Seroprevalensi of Antibody Present Against Salmonella Pullorum from Chicken in Banjarmasin Quarantine Services

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### INTRODUCTION

Chicken is a poultry that is widely maintained in Indonesian society. From the village even up to a small portion of the city's population. Chicken Benefits derived from chicken and others for, household, and meat for other relief. Maintenance of many chickens by the customs and religious activities. Bringing the exploration done by the people here is something that can be done both between regions and between islands. It causes chicken or poultry traffic is very high in The Agricultural Quarantine Service (BKP) Class I of Banjarmasin. Before carrier, chicken or poultry must be healthy from various diseases. Pullorum is one of the most important diseases in chickens. Pullorum is a Quarantine Animal Disease Pest Group II (HPHK Gol. II) Regulation of the Minister of Agriculture [1] on Classification of Types of Quarantine Animal Diseases, Classification and Carrier Media Classification.

Pullorum is a disease in chickens caused by *Salmonella pullorum* bacteria. Form of *S. pullorum* bacteria in the form of short stems, gram negative, not spora and chicken as its specific host. Penile transmission can occur vertically through eggs and mothers to their children or horizontally by direct or indirect contact. It can be directly through drinking water, feed, cage equipment and indirectly through vectors or intermediary animals such as insects and rats [2]. Chicks, adult chickens, peacocks, canaries, turkeys and ostriches. Pullorum infection in mammals is very rare despite research reports or natural infection in rabbits, pigs, cats, cattle and mice [3].

Symptoms of pullorum disease include white defecation and in young chickens or poultry causing very high mortality, while in adult chickens act as a career [2]. The purpose of this paper to know the sero prevalences of the pullorum disease and factors associated with the incidence of *S. pullorum* in chickens carried in The Agricultural Quarantine Service (BKP) Class I of Banjarmasin.

### MATERIALS AND METHODS

Sampling was conducted from March to October 2017 on chickens carried in The

Agricultural Quarantine Service (BKP) Class I of Banjarmasin. Chicken blood is taken using a 3 ml syringe through a *brachial vein* in the wing area of 1.5 ml. Then settled at room temperature until exit serumnya. The serum is separated and inserted in a sterile 1.5 ml eppendorf tube for pullorum agglutination test using Rapid Plate Agglutination (RPA) method by reacting *polivalent pullorum* antigen on WHO plate with 1: 1 ratio, then stirring using agglutination stick. If in about 3 minutes after stirring agglutination reaction occurs, then the serum is said to be positive to pullorum and if no agglutination reaction occurs then the serum is negative pullorum. Agglutination test data to see the relationship between seroprevalence with some chicken group variables, estimated using prevalence ratio (PR).



Figure 1. Sample test using RPA method to react polivalent pullorum antigen in chicken serum (Source : Private collection from The Agricultural Quarantine Service (BKP) Class I of Banjarmasin)

### RESULT AND DISCUSSION

The study of seroprevalence pullorum in chickens carried in The Agricultural Quarantine Service (BKP) Class I of Banjarmasin collected as many as 70 samples with details as in table 1. Seroprevalensi *S. pullorum* as a whole from East Java 92.86%, from south Kalimantan as much as 7.14%. In seroprevalence of *S. pullorum* adult chickens are higher than in chicks. This is due to the adult antibody chickens to Salmonella has been formed so as to act as a career. Serum from

salmonella cocker if done pullorum test will show positive reaction.

Table 1. Seroprevalence *S. pullorum* in chickens carried in The Agricultural Quarantine Service (BKP) Class I of Banjarmasin

Variables	Seroprevalensi(%) (positive serum count/ total serum tested overall)	
	overall 10,00% (7/70)	
<b>Age</b>		
Chick	0 %	(0/30)
Adult	21,21 %	(7/33)
<b>Gender</b>		
Male	0 %	(90/12)
Female	12,07 %	(7/58)
<b>The Origin of Serum</b>		
South Kalimantan	0 %	(0/5)
Java	10,77 %	(7/65)

Seroprevalence in chicks is zero (Table 1), it is because the chickens infected with salmonella will usually die and antibodies to salmonella when it has not formed. Symptoms of pullorum in chicks include white defecation and in young chickens or chickens causing high mortality, while in adult chickens act as a career [2].

Seroprevalence pullorum in hens is higher than that of rooster, this is because the salmonella bacteria colonize in the reproductive tract of the hen so that it will produce eggs contaminated with salmonella. The vertical transmission of pullorum through eggs. Transmission of salmonella also occurs horizontally through food, drinking water, chicken droppings, contact with discharge coming out of chicken and faeces from wild birds (Suwito, et al., 2010). The female chickens whose *Salmonella* chickens career were already dead by *S. pullorum* infection. The *S. pullorum* infection in chicks presents a high mortality rate [2].

Symptoms appear from *S. pullorum* attacks in chickens usually clustered under a source of heat, decreased appetite, drowsiness, dull fur and found whitish feces attached to the chicken rectum [4]. Changes in posthary anatomy in chicks are non-absorbable yolk sacs, focal necropsy of the liver and lymph, there are gray-and-hearted nodules in the lungs and heart, abnormal ovaries, sometimes hemorrhage or pale egg follicles and atrophy [2].

*Salmonella pullorum* is resistant for months or even years at moderate temperatures, but is easily destroyed by disinfecting or formally used for fumigation in hatching machines. Some alternative measures to reduce the incidence of pullorum include: eliminating or not mixing between free chickens with salmonella careers, doing test pullorum on chicken farms and maintaining the sanitation of cages and the environment especially from rats and other insects

as carriers of *Salmonella*.

In the chicken breeding business, pullorum test should be performed and if there is a positive pullorum chicken should be culled or destroyed so that the *S. pullorum* cycle is disconnected. Seroprevalence pullorum in laying hens ranges from 1-2%. This type of cage also affects the pullorum seroprevalence. The enclosure with seroprevalence pullorum litter type is higher than that of individual cages [4].

Seroprevalence pullorum from two regions in Indonesia that is East Java and South Kalimantan is not the same although the same way of life or maintenance. This shows that geographical conditions do not affect the size of the pullorum seroprevalence. Seroprevalence *S. pullorum* and *S. gallinarum* from different regions of origin did not differ [4].

## CONCLUSION

Seroprevalence of *S. pullorum* in chickens carried in The Agricultural Quarantine Service (BKP) Class I of Banjarmasin by 10% with details in chicks 0%, adults 21.21%, 12.07% females, and males 0%. Gender and age of chicken affects seroprevalence. While the area of origin serum has no effect. A pullorum examination is important and a career chicken should be removed from the farm environment to avoid further *S. pullorum*.

## REFERENCES

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