

COMMUNICATION III

Isolation of *Pasteurella haemolytica* from the Spleen of Chickens

ABSTRAK

Pasteurella haemolytica telah diasingkan daripada lapan limpa ayam yang mempunyai lesi fokus berwarna putih. Kajian patogenesis tidak menunjukkan apa-apa kesimpulan yang bermakna.

ABSTRACT

Pasteurella haemolytica was isolated from eight spleens of chickens with white focal lesions. A pathogenicity study in chickens did not reveal any significant findings.

INTRODUCTION

Pasteurella haemolytica is a member of the normal flora of respiratory tract of chickens but not of turkeys or ducks (Mushin *et al.*, 1980). Under condition of stress, this bacterium may acquire the role of an opportunist and will participate in pathological processes (Mushin *et al.*, 1980). Greenham and Hill (1962) reported the isolation of *P. haemolytica* from chickens with enlarged liver and granular lesion in the wall of the intestine while Nicolet and Fey (1965) cited by Hacking and Pettit (1974) isolated *P. haemolytica* from young hens with salpingitis and hens with chronic respiratory problems. Isolation of *P. haemolytica* from lung and oviduct of chicken was reported by Janetschke and Risk (1970) cited by Hacking and Pettit (1974).

Hacking and Pettit (1974) recovered *P. haemolytica* from the liver and heart blood of chicken from eight cases involving decline or abnormality in egg production, peritonitis, salpingitis, enteritis and respiratory problems. An atypical *P. haemolytica* was isolated by Addo and Mohan (1985) from liver with nodular necrosis. The communication reports on the isolation of *P. haemolytica* from the spleen of chickens that were submitted for routine bacteriological examination and the findings of a

preliminary pathogenicity study on *P. haemolytica*.

MATERIALS AND METHODS

A flock of White Ross chickens (900 birds) raised from day-old were used in a Newcastle disease vaccination trial. They were divided into nine groups of 100 birds each according to different vaccination schedules. On two separate occasions, spleens with white focal lesions ranging from 0.5 to 1 mm in diameter were observed at necropsy and were randomly selected for bacteriological examination. Characterization of isolates was based on the identification scheme described by Jang *et al.*, (1976).

Two pathogenicity studies were conducted to determine the role of *P. haemolytica* in the spleen of chicken. In the first study two five-week old White Ross chickens were inoculated intraperitoneally with 2×10^7 colony forming units per ml (CFU/ml) of *P. haemolytica*. Two other White Ross chickens were inoculated into each eye with 0.025 ml of 2×10^7 CFU/ml of *P. haemolytica*.

In the second study, two five-day old SPF chicks were inoculated with 0.025 ml of 2×10^7 CFU/ml of *P. haemolytica* in each eye. Two other SPF chicks were inoculated with 0.025 ml of 2×10^7 CFU/ml of *P. haemolytica* and 0.025

ml of live Newcastle disease V4 strain vaccine in each eye. Two weeks post-inoculation chickens in both groups were necropsied. The spleens were cultured for *P. haemolytica*. The strain of *P. haemolytica* had undergone four passages before the pathogenicity study was conducted.

RESULTS

The bacteriological results obtained from five and three spleens submitted on two different occasions are as follows: *P. haemolytica*, non-haemolytic *Escherichia coli*, and *Citrobacter* spp were isolated from one spleen and pure growth of *P. haemolytica* from the other remaining four spleens. The three other spleens submitted later yielded a mixture of *P. haemolytica*, non-haemolytic *E. coli* and *Enterobacter* spp.

In the pathogenicity studies, chickens in both groups did not show any clinical symptoms. No white spots were observed on the spleen of all chickens and culture from spleen did not reveal *P. haemolytica*.

DISCUSSION

As spleen with white focal lesions was randomly collected and submitted for routine bacteriological examination, the exact number of birds with such spleen lesions is not known. Since the spleen was the only organ sampled, it is not known if *P. haemolytica* could have been present in other organs which may indicate bacteremia. Perhaps, histopathology on affected spleen which was not conducted in this case may provide information on its etiology.

P. haemolytica has been suggested as a secondary invader in chickens suffering from respiratory disease (Gilchrist 1963). Bisgaard (1979) speculates that chickens with infectious bronchitis virus or with a combination of *Mycoplasma gallisepticum* may allow *P. haemolytica* to invade via the respiratory tract. Recently Addo and Mohan (1985) isolated atypical *P. haemolytica* Type A from liver of domestic fowl

with nodular necrosis and they considered it to be highly pathogenic. Mushin *et al.*, (1979) suggested that some internal or external factors may act as a stimulus for *P. haemolytica* allowing it to participate in pathologic processes. However, the role of *P. haemolytica* in spleen with white focal lesions is not known. Further studies need to be carried out to observe the incidence of *P. haemolytica* in spleen of chickens with white focal lesions.

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