Isolation and Partial characterization of Pasteurel la multocida from poultry farms around Tirupati.

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ABSTRACT

India has one of the largest live stock populations in the world. The poultry industry has been one of the key contributors within the live stock sector. There are many infectious diseases which directly or indirectly affect the poultry; thereby causing tremendous loss to the poultry industry. The early detection of diseases is essential to minimizing the spread of the diseases and its impact on other poultry operation. Fowl cholera is a major bacterial disease caused by Pasteurella multocida of major economic importance due to its high mortality. Isolation and identification of the causative bacterium, pasteurella multocida. Presumptive Diagnosis may be based on the occurrence of the typical signs and lesions, the microscopic demonstration and biochemical characteristics.

Key words: poultry, fowl cholera, Pasterulla multocida.

INTRODUCTION

Fowl cholera is a commonly occurring contagious avian bacterial disease caused by pasturella multocida, often causing high mortality, thus resulting in large financial losses in poultry industry. Pasteurella multocida is a Gram negative bacterium infects a wide range of animal species, causing diseases such as fowl cholera in poultry (Glisson et al., 2003), hemorrhagic septicemia and shipping fever in cattle ([Carter and De Alwis, 1989] and [Frank, 1989]) and atrophic rhinitis in pigs (Chanter and Rutter, 1989). Fowl cholera, which is generally caused by serotypes A:1, A:3 or A:4, is a severe systemic disease which occurs in domestic poultry and wild birds and results in significant economic losses to poultry industries worldwide. Current vaccines against fowl cholera include bacterins, which provide only limited protection against homologous serotypes and live attenuated strains, which have been observed to revert to virulence. Therefore, there is a need for more effective vaccines to control diseases caused by P. multocida.

P. multocida infection is generally diagnosed by isolation and identification of the organism from infected tissues (Glisson et al., 2003). Currently, incidences of fowl cholera along with other bacterial diseases are on the increase despite vaccination and proper medication as a sequel of various incriminating factors (Jonas et al., 2001). The diagnosis of fowl cholera is based on clinical signs, pathological findings and the isolation and identification of P. multocida on the basis of its cultural and biochemical characteristics (Rimler and Glisson, 1997).

The present work was carried out to identify the most prevalent bacterial diseases infecting poultry industry and formulate the control measures of these contagious diseases an early identification of the pathogenic microorganisms.

MATERIALS AND METHODS

Isolation of Bacteria
Isolation of the organism an outbreak that are occurred in a private poultry farm. The birds suffering from high morbidity with mucous discharge, diarrhea, and cyanosis of comb. The liver samples were collected to the acute form of the disease separately in two different flocks in the farm at near tirupati. The specimens is directly inoculated into the blood agar medium. The plates were incubated at 37°C for 24 hours on BOD incubater.

Identification of Pasteurella multocida
All isolates were subjected for identification based on cultural, morphological and biochemical characteristics as described in the standard bacteriological methods (Cruickshank et al., 1975). The isolates were identified as P. multocida on the basis of criteria enlisted in Bergey’s Manual (Holt et al., 1994).

RESULTS AND DISCUSSION
The isolates were collected from the poultry farm, processed and characterized for the morphology, biochemical characters of isolates. Small mucoid dew drop like colonies were observed on blood agar medium (fig.1) after incubation at 37°C for 18 hours incubation and appeared as Gram-negative cocco-bacilli were observed when stained with Gram stain. Identification is based primarily on the results of biochemical test results shown in table.

![Fig: 1. Colony morphology of Pasteurella](image)

The isolates that are fermented include: glucose, mannose, fructose and sucrose. Maltose are not fermented. It produced indole, were catalase, oxidase and ornithin decarboxylase. There was no growth on MacConkeys agar and non motile and no haemolysis on blood agar. There was no reaction on methyl red test. The above test results (table.1) show that bacterial isolates identified as Pasteurella multocida.

### Table 1. Tests used to identification of avian Pasteurella species.

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
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<tbody>
<tr>
<td>1. Haemolysis on blood agar</td>
<td>-</td>
</tr>
<tr>
<td>2. Growth on MacConkey’s agar</td>
<td>-</td>
</tr>
<tr>
<td>3. Indole production</td>
<td>+</td>
</tr>
<tr>
<td>4. Catalase production</td>
<td>+</td>
</tr>
<tr>
<td>5. Glucose fermentation</td>
<td>+</td>
</tr>
<tr>
<td>6. fructose fermentation</td>
<td>+</td>
</tr>
<tr>
<td>7. Sucrose fermentation</td>
<td>+</td>
</tr>
<tr>
<td>8. Maltose fermentation</td>
<td>-</td>
</tr>
<tr>
<td>9. Mannose fermentation</td>
<td>+</td>
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<tr>
<td>10. Ornithine decarboxylase</td>
<td>+</td>
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REFERENCES