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LATEX IMMUNOASSAY FOR RAPID DETECTION OF NEWCASTLE DISEASE VIRUS

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SUMMARY

A rapid test has been developed based on the technique of latex immunoassay for the detection of Newcastle disease virus from suspected tissue suspensions. The latex particles were sensitised with globulins and were used for antigen detection. Of the 258 samples tested, 165 samples were positive by this kit which was compared for its efficacy with the standard OIE approved haemagglutination (HA) and haemagglutination inhibition (HI) tests. No significant difference ($P > 0{\cdot}05$) was observed between the tests. The sensitivity and specificity of the developed test was 94·19% and 87·63% respectively.

INTRODUCTION

Newcastle disease (ND) is a highly contagious and infectious disease affecting poultry and has caused considerable loss to the poultry industry from mortality and loss in egg production. Despite various control measures including slaughter and compensation, quarantine measures, and regular and systematic vaccination, ND continues to plague the poultry industry. Since laboratory services for NDV detection are not always available in rural areas, a sensitive, simple, inexpensive and specific field test for rapid and accurate diagnosis is necessary for immediate control measures to combat the disease and to avoid further dissemination. This study highlights the usefulness of the latex agglutination test (LAT) in the detection of NDV antigen in suspected biological materials collected from ailing or dead birds.

MATERIALS AND METHODS

Tissue suspensions

Suspected tissue samples (brain, trachea, spleen, proventriculus, ileocaecal tonsil and intestinal contents) were collected in 50% glycerol saline from field outbreaks and transported to the laboratory. The samples were rinsed and ground in PBS (pH 7·2) and the tissue suspensions were used in the study. Positive diagnosis of the samples was first based on the agglutination of chicken erythrocytes and inhibition of the agglutination by specific antisera. The tissue samples were then coded before testing by LAT and assayed at least twice.

Preparation of antiserum and globulins

Antisera and globulins were prepared in chickens as per the methods described earlier (Hudson and Hay, 1980). The globulins were sequentially precipitated by a 45% saturated ammonium sulphate solution and the final precipitate was dissolved in a minimum quantity of PBS (pH 7·2) and dialysed extensively against PBS at 4°C.