

Hygiene Protocols for the Prevention
and Control of Diseases
(Particularly Beak and Feather Disease)
in Australian Birds

Haemagglutination and
Haemagglutination Inhibition



Australian Government

Department of the Environment and Heritage

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Note

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Haemagglutination and Haemagglutination Inhibition

The haemagglutination (HA) test for BFDV is used to detect the presence of and titrate the virus, which agglutinates some avian erythrocytes (red blood cells, RBCs).

The haemagglutination inhibition (HI) test is used for detection and titration of specific antibodies to BFDV. In the HI test, a constant amount of BFDV is added to doubling dilutions of serum from a test bird, and incubated for a set time. At that time, RBCs sensitive to the virus under the conditions of the test are added and the incubation continued. If agglutination occurs, the serum does not contain virus-specific antibody. If agglutination does not occur, then the sample contains virus-specific antibody. The HI test is really a neutralisation test with RBC agglutination as the indicator. The principle of the test is to determine, by dilution, the level of (agglutination) inhibiting antibodies in a bird's serum that will prevent the agglutination of the indicator system (susceptible RBCs). The great majority of birds with HA titres for BFDV do not have antibody to the virus, and so lack a HI titre. The majority of birds with antibody to the virus (HI titre) do not excrete the virus, as long as they do not have contact with the virus. Interpretation of the test is shown in Figure 1.

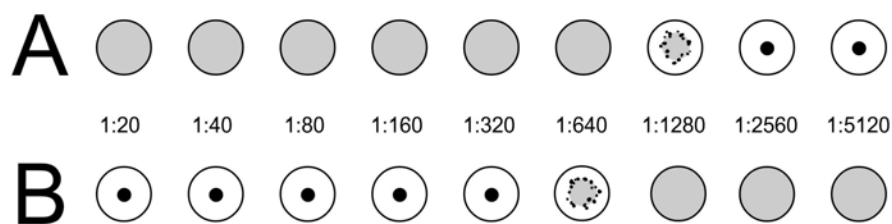


Figure 1. Diagram of a sample hemagglutination assay detecting viral antigen (A) and a hemagglutination inhibition assay for a different bird detecting viral antibody (B). Serial doubling dilutions from 1:20 shows the complete hemagglutination end point in A is 1:640, and the complete hemagglutination inhibition end point in B is 1:320.