International Poultry Production

Poultryhealth BYTES

Your own reference source on poultry health

Number: 184

Avian influenza II

Haemagglutinin (H) and neuraminidase (N)

The haemagglutinin protein is a trimer that is manifested as spikes on the external lipid membrane of the influenza virus, whereas the neuraminidase protein is more globular in shape and extends from the surface lipid membrane.

As has been previously noted, these H and N proteins provide the basis for the classification into subtypes. Currently 18 H subtypes are known and they are named H1 to H18.

The most common avian influenza virus H types are H1, H3, H5, H7 and H9. H1 to H13 have been found in poultry. H1 to H16, excluding H14, have been found in wild birds. H1 to H10, excluding H8, have also been isolated from mammals, whereas H17 and H18 have only been found in bats.

Isolation of influenza viruses

Influenza viruses can be easily grown in embryonated chicken eggs and, more recently, cell cultures have been used.

However, for avian influenza viruses, by far the most popular isolation method is embryonated chicken eggs and the preferred age of the embryo is 9-11 days for inoculation of test material into the allantoic cavity. One big advantage of this method is that it can be used for both HPAI and LPAI viruses.

Some turkey strains of avian influenza virus do not grow well in chicken embryos. These same viral strains do not agglutinate chicken cells so if the haemagglutination inhibition test is used to serologically screen flocks for these strains the test should use turkey or guinea pig red blood cells, not chicken ones.

The naming of influenza viruses

To give each isolated avian influenza virus a unique designation they are named using a system that has six components.

1: Antigenic type (A, B, C or D).

2: The host species from which the virus was isolated.

3: The geographic region of the isolation.

4: A unique reference identification number.

5: The year of isolation.

6: Its H and N subtypes.

For example:

A/chicken/Canada/AVFV2/2004/H7N3

A/chicken/Puebla/8623-607/1994/H5N

A/tern/ South Africa/ - /1961/H5N9