

Research Update - PSITTACINE PAPOVAVIRUS

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A significant advancement was made this past year in studies at the University of Georgia, College of Veterinary Medicine, on the psittacine papovavirus (budgerigar fledgling disease virus) with the development of a fluorescent antibody method to detect the virus. This method has given us the ability to detect virus in tissues of birds as well as a more rapid and definitive way of detecting virus and antibodies against the virus. Prior to this development, cell cultures had to be held 7 or 8 days to detect the cytopathic effects of the virus. By this time the cultures were very old and nonspecific cytopathic effects could be confused with viral cytopathology. This new technique has allowed us to detect virus in all cultures at 2-3 days rather than 7 or 8, and when positive fluorescence is observed we know that the cell damage is due to the virus and not some other factor such as aging.

The primary application of this FA test has been its use to detect antibodies. This is done by mixing some virus (100 infectious units) with dilutions of serum. These mixtures of virus and serum are then inoculated onto cell cultures. Three days later the cell cultures are stained with the fluorescent antibody. If no infected cells are present, this indicates that the serum contained antibodies and neutralized the virus. By diluting the serum we can determine just how much antibody is present in a given serum sample.

Presently, serums are routinely diluted 1:5, 1:10, 1:20, 1:80 and 1:320. The presence of antibodies at dilutions of greater than 1:320 are of little significance to us at this point. Our experience would indicate that normal serum diluted 1:5 can neutralize the virus. A

titer of 1:10 may or may not be significant but a serum titer greater than 1:10 is definitely positive and is an indication that the bird has been or is infected. We have had titers as high as 1:3000 in experimentally infected birds. Most serum titers of birds range from 1:40 to 1:1280.

Table 1 lists all of the psittacine bird species other than budgerigars that have been found to have significant antibody titers (greater than 1:10) to the psittacine papovavirus. The myna bird belonging to the Passerine family has also been shown to have antibody to the virus. In many cases the presence of the virus has been confirmed in these other species by histopathology, electron-microscopy and/or detection of infected cells in spleen tissue by the fluorescent antibody test.

Limited studies have been done concerning the transmission of the virus. In one study two seropositive parakeets were placed in an isolation unit in contact with 4 seronegative parakeets. After six weeks all of the seronegative parakeets had become positive, indicating spread of the virus from the 2 seropositive birds. A second study involved a seropositive sun conure in an isolation unit with 4 seronegative parakeets. These parakeets were still negative after six weeks indicating that the sun conure was not shedding the virus. More definitive studies on transmission are scheduled for the coming year.

Work is now in progress to develop an effective and potent killed vaccine. We will be able to test the new vaccine's potency with greater accuracy with the new fluorescent antibody test procedures. In the past our procedures did not allow us to do this. ●

Table 1

List of Psittacine Bird Species that have Psittacine Papovavirus Virus Neutralization Titers of Greater Than 1:10.

Macaws	Cockatoos	Misc.
Scarlet Macaw	Moluccan Cockatoo	Sun Conure
Hyacinth Macaw	Bare-Eyed Cockatoo	Golden Conure
Buffon's Macaw	Umbrella Cockatoo	Jendaya Conure
Green-Wing Macaw	Triton Cockatoo	St. Thomas Conure
Blue & Gold Macaw	Red Vented Cockatoo	Eclectus Parrot
Hahn's Macaw	Citron Crested Cockatoo	Meyer's Parrot
Military Macaw	Medium Sulphur Crested Cockatoo	African Grey Parrot
	Rose Breasted Cockatoo	Yellow-Naped Amazon
	Leadbeater Cockatoo	Plum Crown Pionus
	Lesser Sulphur Crested Cockatoo	Rainbow Lorikeet
	Goffins Cockatoo	Quaker Parakeet



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