

Salmonella typhimurium agglutinins in exotic bird sera in the USA

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A preliminary survey of 2,407 psittacine bird sera for *Salmonella typhimurium* agglutinins has been reported.¹ The purpose of the current survey was to obtain additional data on psittacine bird sera and to expand testing to include other types of exotic birds.

The 3,915 psittacine bird sera and the 239 pigeon and dove sera tested were selected from those submitted to the Texas Veterinary Medical Diagnostic Laboratory (TVMDL) for *Chlamydia* testing as previously described.¹ The 17 ostrich sera were submitted specifically for *Salmonella* serology because of an existing disease problem. The 7 emu sera were submitted for *Salmonella* serology for a health status check.

The whole bacterial cell-stained antigen and the slide agglutination testing methods were used as previously described.¹ Antigen was purchased from the University of Minnesota and stained at the TVMDL.

The results on all types of birds are shown in Table 1. Positive reactions (complete agglutination) occurred in sera from 16 (3.3%) of 489 African gray parrots submitted singly and 23 (28.75%) of 80 submitted from a breeder group; 8 (0.7%) of 1,222 Amazon parrots; 1 (0.7%) of 141 cockatiels; 2 (0.4%) of 566 cockatoos; 1 (0.4%) of 227 conures; 1 (0.2%) of 636 macaws; 1 (3.0%) of 33 Senegal parrots; 1 (unspecified parrot type) (0.2%) of 521 mixed types of psittacine birds; 6 (2.5%) of 239 pigeons and doves; and 1 (5.8%) of 17 ostriches. Geographic locations of serologically positive birds, which were from 12 states widespread across the USA, are not shown.

Equivocal reactions (partial agglutination) were found in sera from 3 African gray parrots, 8 Amazon parrots, 3 macaws, 1 Pionus parrot, 2 parrots of unspecified type, 2 pigeons and doves, and 1 ostrich. All of the 7 emu sera were negative.

The overall percentage of positive reactions in psittacine bird sera was comparable to that reported previously.¹ Again, a group of Congo African gray parrots had a high percentage of reactors. This group was established in a breeder facility, whereas the first such group reported was a newly imported group. The Congo African gray parrot appears to be highly susceptible to *S. typhimurium* infection.

The positive serologic results indicate that Amazon parrots and pigeons/doves also probably are important hosts of *S. typhimurium*. Because of the small numbers of cockatiel and Senegal parrot sera tested, it is not clear how important these psittacine bird types are as hosts of *S. typhimurium*, although the percentages of positive results were respectively comparable to those of Amazon parrots and African gray parrots.

Salmonellosis caused by *S. typhimurium* can be a problem

Table 1. Reactions of *Salmonella typhimurium* agglutinins in 4,178 sera from exotic birds in the USA

Bird	No. tested	Results*	
		Positive	Equivocal
African gray parrot			
Single sera	489	16† (3.3)	3 (0.6)
Breeder group	80	23 (28.75)	0
Amazon parrot			
Cockatiel	141	1 (0.7)	0
Cockatoo	566	2 (0.4)	0
Conure	227	1 (0.4)	0
Macaw	636	1 (0.2)	3 (0.5)
Senegal parrot	33	1 (3.0)	0
Psittacine, mixed	521	1‡ (0.2)	3§ (0.6)
Pigeon/Dove	239	6 (2.5)	2 (0.8)
Ostrich	17	1 (5.8)	1 (5.8)
Emu	7	0 (0.0)	0
Totals (mean %)	4,178	61 (1.5)	20 (0.5)

* Number (%) of positive sera. Positive indicates complete agglutination; equivocal indicates partial agglutination.

† One of these sera was culture positive for *Salmonella* at another laboratory.

‡ A parrot of unspecified type.

§ Two parrots of unspecified type and 1 Pionus parrot.

|| This bird was culture positive for *Salmonella* at another laboratory.

in the exotic bird population, as indicated by reported outbreaks.^{3,4} Because it is useful for testing poultry, serologic testing of newly imported birds or birds that are traded or sold among zoological collections, breeders, or fanciers could be helpful in detecting silent carriers and possibly could help prevent the spread of infections. Certainly in the case of diseased birds serologic testing could be helpful. However, in addition to *S. typhimurium*, antigens made with other *Salmonella* species may be needed, as evidenced by the recent report of *S. enteritidis* infection in 2 species of Amazon parrots.²

References

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