

DEVELOPMENT OF A POLYMERASE CHAIN REACTION PROCEDURE FOR DETECTION OF CHICKEN AND TURKEY PARVOVIRUSES

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Study Results

Phylogenetic analyses comparing NS gene segments showed that most of the chicken and turkey parvovirus isolates formed separate phylogenetic groups (Table 1). These findings suggest that the chicken and turkey parvoviruses might have diverged from a common ancestor and have subsequently undergone host specific adaptation.

Significance of Study Results

For the first time, the data from this study clearly demonstrate that parvoviruses are widely distributed in commercial poultry flocks in the US. The high prevalence of parvovirus infection in birds from enteric disease-affected flocks suggests a potential role of these viruses in the etiology of enteric disease of poultry.

Additional Information

Enteric diseases of poultry cause significant economic losses because of decreased bird weight gain, increased morbidity and mortality and increased production costs from poor feed conversions and the cost of treatment. Pathogens involved in enteric disease include bacteria, protozoa and viruses. Currently, the role of these pathogens in the etiology of enteric disease of poultry is not completely understood.

Two major viral enteric diseases occur in poultry—poult enteritis complex (PEC) in turkeys and runting-stunting syndrome (RSS) in chickens. Poult enteritis mortality syndrome (PEMS) of turkeys is a more severe disease that is characterized by higher mortality rates. The etiological agents of poultry enteric diseases are likely many and include potential candidates such as reovirus, coronavirus, rotavirus and astrovirus. Such viruses are sometimes isolated from birds both with and without disease, suggesting that pathotypic variation occurs between the viruses, or a certain combination of pathogens or factors

Table 1. Parvovirus detection in enteric samples of commercial chicken and turkey flocks.

Species	State of origin (number of samples)	Date of collection	Number of parvovirus positives (%)
Chickens	GA (10)	2005, 2006	7
	NC (3)	2005	1
	SC (1)	2005	1
	DE (1)	2005	1
	MO (16)	2005, 2008	11
	AR (23)	2005, 2008	19
	CA (6)	2005, 2006	6
	Total (60)		46 (77)
Turkeys	NC (22)	2003, 2005, 2008	21
	VA (1)	2003	0
	MN (12)	2007	5
	TX (1)	2004	0
	CA (42)	2004	35
	Total (78)		61 (78)

is required for disease presentation. A vaccine for PEC, PEMS or RSS has not yet been developed because of the ambiguity concerning the exact etiological agents of these diseases. Management of poultry enteric diseases includes cleaning and disinfection of poultry houses, increased biosecurity, and antimicrobial therapy to reduce the affect of bacterial coinfection.

Parvoviruses have also been identified in turkeys and chickens exhibiting enteric disease characterized by stunting, diarrhea, and mortality. Inoculation of day-old broilers with purified parvovirus particles resulted in characteristic clinical signs of RSS. Although parvoviruses are common pathogens in other species, the prevalence of parvoviruses in chicken and turkey flocks has not been studied using more definitive methods and the role of these viruses in the etiology of enteric disease in poultry has not been further investigated.

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