

Congo Red Binding in Escherichia Coli

by Darrel K. Styles, D.V.M. & Keven Flammer, D.V.M.

Department of Companion Animal and Special Species Medicine

College of Veterinary Medicine, North Carolina State University, Raleigh, North Carolina

Infections by gram negative bacteria are among the most common problems encountered in psittacine birds. In particular, the bacteria *Escherichia coli* is responsible for considerable disease. However, apparently nonpathogenic strains of *E. coli* can also be isolated from the cloaca of

healthy psittacine birds and there is controversy as to whether it is necessary to treat all birds that carry *E. coli* in their gastrointestinal tract. Currently, there is no readily available laboratory technique for assessing the disease causing potential (pathogenicity) of various strains of *E. coli*. The purpose of this project was to investigate the potential use of Congo Red dye binding as a screening test for determining the pathogenicity of *E. coli* isolated from the cloaca of psittacine birds.

Congo Red is a dye that can be added to bacterial growth media. In the poultry industry, some studies have indicated that only pathogenic *E. coli* will bind this dye, resulting in a visible change in the color and appearance of the bacterial colony. Positive colonies are red and have a wrinkled surface while negative colonies are pink with a smooth surface. In poultry, only Congo Red positive *E. coli* will cause disease when inoculated into chicks; Congo Red negative colonies will not. Congo Red testing has been primarily used to identify potentially pathogenic strains of *E. coli* in hatcheries and brooders where aerosolized bacteria can be a significant problem for poultry chicks raised in concentrated environments.

In our study, we investigated the incidence of Congo Red binding in *E.*

coli isolated from the cloaca of psittacine birds and correlated the results with the subjective health status of the birds (see Table 1). *Escherichia coli* was isolated from 120/435 (27.6%) of the birds: 85.8% were Congo Red negative and 14.2% were Congo Red positive. Congo Red positive colonies were cultured only from clinically ill birds, however, Congo Red negative *E. coli* was isolated from both healthy and ill birds.

It is possible that some ill birds harboring Congo Red negative *E. coli* were sick due to causes other than the *E. coli*. To absolutely determine if the Congo Red positive and negative *E. coli* strains were truly pathogenic and nonpathogenic would require that we inoculate each isolate into young birds and look for signs of disease. This study was not done due to the obvious ethical concerns of inducing illness in psittacine birds.

These results suggest that there is some correlation between the isolation of Congo Red positive colonies and signs of clinical illness in psittacine birds, however, this finding was not consistent and this test would not be useful for screening cloaca cultures from psittacine birds. This study demonstrates that tests developed for poultry cannot always be directly transferred for use in psittacine birds.

Table I

Incidence of Congo Red positive and negative E. coli isolated from the cloaca of subjectively healthy and ill psittacine birds.

	Healthy	Ill	Total
Positive	0	17	17
Negative	71	32	103
No <i>E. coli</i> *	249	66	315
Total	320	115	435

*"No *E. coli*" indicates that *E. coli* was not isolated from the cloacal culture, however, other microbial species may have been isolated.

Cathy House

Button Quail
 NORMALS • MUTATIONS
 269 Orange Avenue
 Goleta, California 93117
 (805) 968-4024

Orange County Bird Breeders
 Presents:
The Original
9th Annual Bird Fair
 Orange County Fairgrounds • Bldg. # 10
Sunday, September 16, 1990
9:00 AM to 4:30 PM
 • Birds & Supplies • Exhibits • Refreshments
 • Free Educational Seminars
Unique Drawing
You need not be present to win
 1. Macaw 2. Hand Fed White Cap Pionus
 3. Pair Blue Indian Ringnecks 4. C.D. Player
Free Parking!
Donations:
 Adults age 14 & up - \$3.00
 Children age 3 - 13 - \$1.00
General Information & Booth Sales:
 Susan Mooney (213) 868-8292
 Bob Bramer (714) 626-4761
 David Baumgardner (714) 539-2522

Bird Pet and Supplies
Retailers
 did you know that one of the most prestigious bird publications,
The Watchbird
 is available for resale in your store?
 Call or write for information:
 American Federation of Aviculture
 P.O. Box 56218
 Phoenix, Arizona 85079-6218
 Phone (602) 484-0931