STUDIES ON EPIDEMIOLOGICAL MARKERS OF AVIAN *ESCHERICHIA COLI* WITH SPECIAL REFERENCE TO ITS SOURCE OF INFECTION AND CONTROL MEASURES

S. SIVAKUMAR

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CERTIFICATE

This is to certify that the thesis entitled **STUDIES ON EPIDEMIOLOGICAL MARKERS OF AVIAN *ESCHERICHIA COLI* WITH SPECIAL REFERENCE TO ITS SOURCE OF INFECTION AND CONTROL MEASURES** submitted in part fulfillment of the requirements of the degree of **MASTER OF VETERINARY SCIENCE** in Veterinary Microbiology to the Tamil Nadu Veterinary and Animal Sciences University, Madras is a record of bonafide research work carried out by **S. SIVAKUMAR** under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

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External Examiner.

(Dr. G. Krishnappa)

ABSTRACT

STUDIES ON EPIDEMIOLOGICAL MARKERS OF AVIAN *ESCHERICHIA COLI* WITH SPECIAL REFERENCE TO ITS SOURCE OF INFECTION AND CONTROL MEASURES

Name	:	**S. SIVAKUMAR**
Degree for which submitted	:	M.V.Sc., (Veterinary Microbiology)
Chairman	:	Dr.N.Dorairajan, M.V.Sc., Ph.D., Professor and Head Department of Microbiology Veterinary College and Research Institute Namakkal - 637 002.
University	:	Tamil Nadu Veterinary and Animal Sciences University
Year	:	1996

Two hundred and fifteen isolates of *E.coli* were obtained from different sources of avian origin and their pathogenicity was confirmed by chick pathogenicity test and congo red binding ability. The congo red binding ability highly correlates positively with chick pathogenicity. Serotyping, bio-typing, antibiogram typing and resistogram typing were used as epidemiological markers to pin point the sources of infection.

E.coli strains with typical epidemiological markers were isolated from various sources on a breeding farm and commercial chicks and the source of infection was traced to cloacal strains of *E.coli* of breeding hens and commercial hens, workers, washing solution, chick box surfaces, feed, litter, water source, and environment respectively.

respectively. And in commercial farms also the epidemiological markers gave validity in tracing the sources of infection corresponding to the cloacal strains of commercial hens, feed, water, environment and litter.

Pathogenic *E.coli* occurred concomitantly with NDV, IBV, IBDV, *P.multocida Eimeria necatrix* and *Ascaridia galli.*

Control of *E.coli* infection at farm level was attempted by sanitation of drinking water with 16 ppm and 20ppm of chlorine ; 0.5 % and 1% levels of iodine and 0.1 and 0.2% of quaternary ammonium compounds (QACs) in healthy and affected farms. The critical level of residual chlorine was 2 ppm for total counts and 0.2 ppm for coliforms. The efficacy of QACs was significant ($P < 0.01$) when compared to chlorine and iodine.

It was observed that there was no significant difference in the efficacy of phenolic compunds and aldehyde + QACs combination in reducing the environmental load under field conditions. They were not able to maintain their efficacy, because of air current .